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AUTHORITY

USAEA ltr, 12 Jun 1969

AD

REPORT R-1838

QUALITATIVE DEVELOPMENT REQUIREMENTS INFORMATION (QDRI)

DEVELOPMENT OF MICROFILM PROGRAM IN SUPPORT OF AMC QDRI DATA FILES

by

JAMES G. PEIRCE

AMCMS Code 5700.00.00201.02
DA Project 1A750203M613

MARCH 1967

UNITED STATES ARMY
FRANKFORD ARSENAL
PHILADELPHIA, PA.

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U. S. ARMY FRANKFORD ARSENAL
Philadelphia, Pa. 19137

March 1967

ABSTRACT

Microfilming of QDRI records was proposed in order to make total QDRI registration data more accessible to all QDRI offices, create uniform Army-wide QDRI records, reduce volume of QDRI files, limit data requirements on the QDRI data bank (RODATA), and provide faster and more accurate updating of industrial R&D catalog information. The VSMF System of Information Handling Services, Englewood, Colorado was selected as a promising possibility. This report outlines the results obtained from a test using Boston Procurement District files, and contains recommendations for expansion to an Army-wide standard operating system. This activity is considered as a part of the Army's scientific and technical information program.

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INTRODUCTION

During the summer of 1965, the VSMF* (Visual Search Microfilm File) operation was brought to the attention of the managers of the Army QDRI (Qualitative Development Requirements Information) program. Briefly, the VSMF mechanism is a relatively simple combination of printed product indexing and 16mm microfilm cartridge recording of product catalogs and product specifications made quickly retrievable and visible by either Kodak's Recordak or the 3M Filmac microfilm reader printers. Of primary interest to the QDRI program and the development of the AMC QDRI Data Files for the Registered Organization Data Bank (RODATA) was the fact that most of the industries registered in the QDRI program were represented on VSMF microfilm cartridges, and that there was a great similarity in QDRI and VSMF procedures. It was seen almost immediately that there could be a great reduction in QDRI filing across the board in all AMC installations, with better access to industry catalog data, by adoption of VSMF methods of registration files, and also that such microfilming could be easily cross-referenced to the RODATA.

In November 1965, a visit was made to the proprietors of the VSMF system at Englewood, Colorado. The QDRI program was explained to the VSMF management, who in turn demonstrated all of the capabilities of the system. A tentative plan was evolved at that time, which was confirmed by a proposal letter in January 1966. The proposal was used as the basis for a purchase order in May 1966 for the preparation of microfilm cartridges on the QDRI files of the Boston Procurement District, as a pilot test preliminary to the microfilming of all QDRI records. This test was completed in October 1966, and the results were demonstrated during the balance of 1966 to groups of QDRI managers, and several Army-Industry associations. This report presents recommendations for future microfilming activities, aimed at total recording of all QDRI facility registration data.

*A copyrighted microfilm data file owned by Information Handling Service, Inc., Englewood, Colorado.

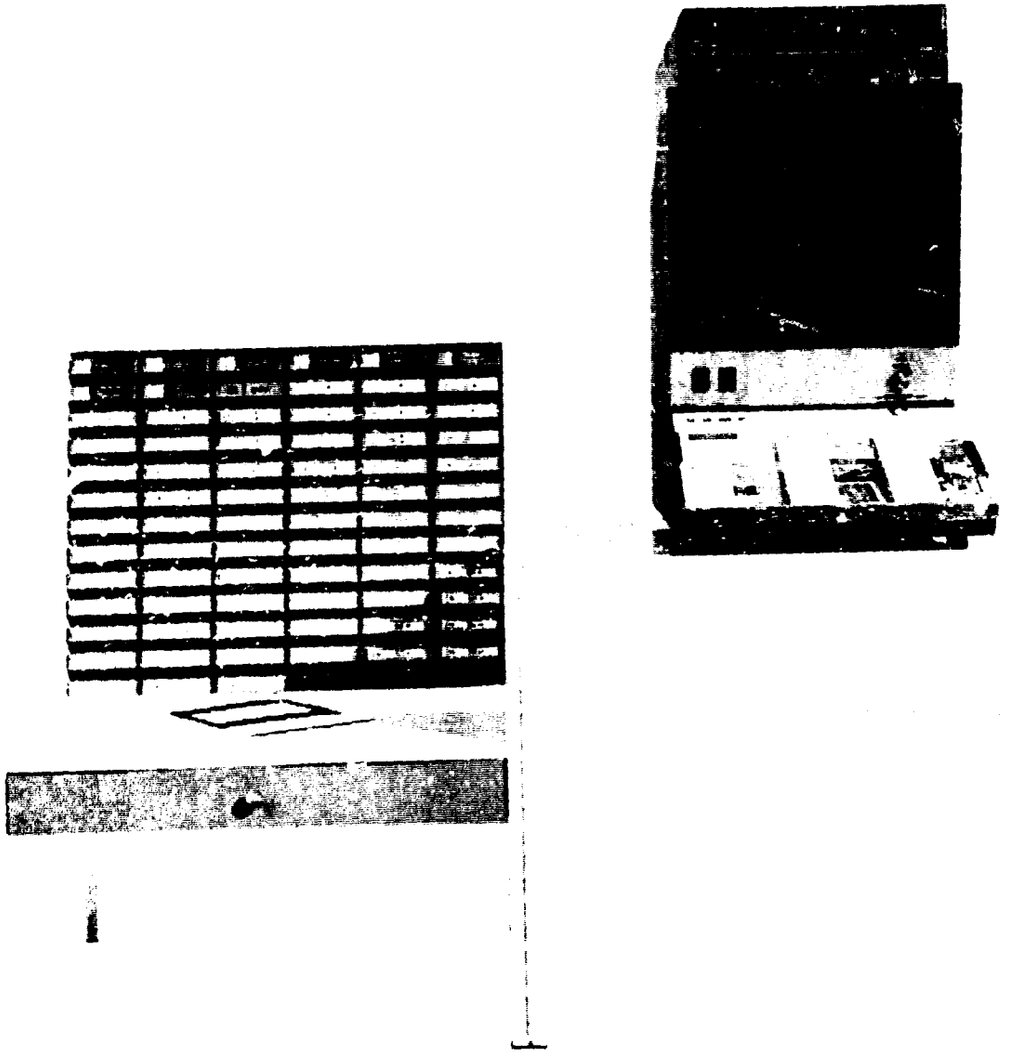

Figure 1. VSMF Microfilm Reader

THE PROBLEMS

Deactivation of the Procurement Districts

During the summer of 1965 the implementation of Project 60[1] began to effect most seriously the operations of the QDRI program. The Philadelphia Procurement District (the pilot Project 60 activity) had transferred its QDRI files to New York in 1964. The Detroit Procurement District had converted to DCAS in April 1965, and its files were transferred to the QDRI office at ATAC. The Boston Procurement District was scheduled to convert in July, and the other districts, with the exception of Los Angeles and San Francisco, were scheduled for conversion to DCAS at intervals during CY 1965. This conversion was put into effect without taking into full consideration changes in operating procedure in the QDRI program which would have to be effected as each district became deactivated.[2] Two major problems required solution in 1965.

These were first, the transfer of usable data from existing files in the districts to other locations in 1965 and 1966, and second, establishment of a uniform procedure for making new registrations, and updating old registrations.

The RODATA Plan

In March 1965, the QDRI office at Frankford Arsenal proposed the establishment of a computerized data bank at Frankford Arsenal for the data on civilian organizations registered in the QDRI program, in an attempt to solve the serious problems being encountered in recording new QDRI registrations and the updating of old registrations. This data bank, when fully actuated, would assist all Army registration agencies in location and assignment of registrations, and would

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[1] Project 60 was the plan for conversion of Army Procurement Districts and other DOD contract administration activities to DCAS (Defense Contract Administration Service).

[2] AMCR 70-19 provided that "When a district is phased out, contact will be made with the major subordinate command or separate laboratory or installation assigned the responsibility for qualifying industry."

become a major referral tool for use by all levels of QDRI management. The RODATA (an acronym for Registered Organization Data) would not assume the responsibility for QDRI qualification, which function is clearly the prerogative of each QDRI manager at major subordinate commands, their installations, or independent laboratories. It is important to the thesis of this report, however, that the RODATA would record basic identification and retrieval data about all hard copy which should be common to the files of all or almost all QDRI offices. The RODATA plan is to be found in Frankford Arsenal Memorandum Report M65-13-1, dated March 1965 (AD 612-595).

QDRI Files Reduction

There is another problem, general to the QDRI program at all RDTE agencies, which appears amenable to solution by institution of a microfilm process. This is files reduction. The average QDRI office has a variety of brochures and pamphlets on file covering at least five hundred or more registered organizations. Some civilian organizations are very good at updating their literature; others are not. The brochure material is seldom employed, although still useful, after the initial evaluation of the organization, except that once in a while the QDRI manager may use it to demonstrate to an engineer some unusual, but particularly pertinent data on a "just-needed-then" capability. If an engineer looking for new talents and capabilities had the time, he might like to browse in the QDRI capability brochures - but he never has time. Consequently, several QDRI managers destroy all brochure data when it is six months to one year old, including some very fancy and expensive presentations. Others find that large segments of their files are never used. Yet there is useful material in these files. Also, the DD Form 558-2 and AFSC Form 320 calls for background documentation supporting the stated capabilities of the registered organization. The instructions for the new R&D Capability Index propose considerable reduction of such documentation (see Appendix 1). Microfilming and a continuous microfilm program such as VSMF proposes would be most beneficial in this area, and useful R&D brochure data could be more easily and consistently utilized, updated, or retired. It is estimated that the eight to ten files now in use at Frankford Arsenal, for instance, could be easily reduced to two, with the addition of the microfilm reader and its magazine of cartridges.

Need for Hard Copy

There are seven more or less standard documents established in the QDRI management literature[3] as submissions required from the civilian organizations registered in the QDRI Program (see Appendix 4). Approximately in the order of their importance to the program these are:

(1) A policy agreement (AMC Form 1262 or equivalent);

(2) Classification of the organization's capabilites (DD Form 558-2 or equivalent);

(3) Certification of the current level of security clearance by the cognizant security agency (format varies);

(4) Profiles or resumes of the key scientific and technical personnel in or available to the organization (no established format);

(5) A listing of current and recent DOD or other government contracts applicable to claimed R&D capabilities (not formatted);

(6) Description of the research and development facilities (real estate, laboratories, equipment) employed or available to the organization (also no established format); and

(7) The latest financial statement or annual report containing such data (not an absolute QDRI requirement, but acceptable).

The QDRI rule has always been, up to now, that with the exception of the policy agreement and the DD Form 558-2, any company's available literature which presents the desired data is acceptable, and that elaborate brochures created particularly for the QDRI program are not necessary. In fact, some economy-minded managers are influenced adversely by elaborate presentations. Also, there is nothing new in these requirements. They represent the standard data requirements of the ASPR's, the Small Business Administration, and contracting officers generally for inclusion in DOD R&D Source Lists (except for the policy agreement which is peculiar to classified information programs). Most of this data is also required in connection with RDTE

[3]AMCR 70-19 dated 13 October 1964 and QDRI Vol. I, January 1965.

pre-award surveys. This is also identical with the hard copy data requirements of the new standardized DOD/NASA uniform industrial RDTE registration proposed on 30 January 1967 by the subcommittee on Case 66-151 to the ASPR Committee (see Appendices 1 and 2).

Consolidation of R&D Source Lists

It is the overall aim of DOD management to reduce duplication of data wherever possible, particularly its original compilation and storage in any well integrated organization. Industry associations such as NSIA (National Security Industrial Association) and EIA (Electronics Industries Association) have also requested DOD to reduce the number of forms, individual surveys, and submittal points required for RDTE qualification data. The Air Force has a single submittal point at Andrews Air Force Base, NASA a single submittal point at the Goddard Space Flight Center, but the Army and the Navy have not yet centralized. Responsibility in the Army is assigned to the Army Materiel Command. In USAMC it appears that procurement policy, except for acceptance of a uniform R&D Capability Index, is to allow each major procurement office to request individual submittals and establish source lists according to mission commodity assignments. At least, a few years ago when the Army Procurement Districts were operating, there was an across-the-board source selection capability in each district.[4] Also, except in those installations where the procurement is mainly R&D (such as Natick Laboratories), variable attention is being paid by the procurement functions to the R&D source needs, both for pre-procurement information programs such as QDRI and the RDTE registrations in bidders source selection lists. Adoption of the uniform R&D Capability Index, and the establishment of the QDRI RODATA will help the Army create a separate data authority. Also, the initiation of the VSMF-type microfilm program will serve the same ends.

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[4] This capability now exists officially only in the Northwest and Southwest Procurement Agencies.

THE VSMF PROCEDURE

The VSMF is an automated technical data file orginally created for use by the design engineer in searches for product data. It is a relatively simple concept, not only in use, but also in preparation and execution. The cartridge microfilm application is not original with IHS, Inc. Almost everyone has by now seen its use by Sears Roebuck & Co., and other catalog-oriented organizations for the selection of spare parts and, for a more technical use, one is referred to recent adoption by Chemical Abstracts for reduction in file volumes and increased accessibility of back issues of that compendium. Unique to VSMF is its masterful organization of product and specification data, its indexing system, which is copyrighted, and its marketing practices which spread the costs in easily absorbable chunks to both the suppliers and users of product data (often different segments of the same organization). The following description is certainly not presented as VSMF would describe itself, since it is definitely slanted towards aspects pertinent to Army plans, especially RODATA plans, for the QDRI Program.

Collection of Data

VSMF sells its services to commercial industrial organizations who supply data for microfilming. A five page questionnaire is used, which is more elaborate than the SF 129, the DD Form 558-1, and the first page of the DD Form 558-2, combined. However, it does not go into the classification detail provided by the DD Form 558-2 and the new R&D Capability Index. The submitting organization uses its own terminology to describe capabilities and interests in three separate sections of the questionnaire (see Appendix 3). This form is reproduced in the VSMF file. Standard vendor catalog data is also supplied in support of the data on the questionnaire. The services and products of the vendor are indexed by VSMF according to its copyrighted index system. In general, the questionnaire and catalog data are updated annually. Except that QDRI data is formatted differently, great similarity is clearly evident in the submission of questionnaire and catalog (brochure) data, and annual updating.

Microfilming Operations

The fine details of the microfilming process for the regular VSMF operations are not of great importance here. Later in this report a detailed discussion of the QDRI operations is provided. The original master microfilm, always retained by VSMF, is a standard photographic emulsion negative process operation. From this master, diazo prints are made with great rapidity, to supply subscribers with microfilm cartridges. Each microfilm cartridge unit is given a distinctive number, which is used in the VSMF printed index for locating selected data. Each product and each vendor are indexed to the unit in which they appear.

Use of the Microfilm

The normal designer search operation is to look in the printed index for desired products, then locate that group of products in specified cartridges. When the products that satisfy design requirements have been located, if desired, the designer can refer to the vendor's questionnaire in another cartridge for data to use in preparing a purchase specification.

For the proposed QDRI cartridges, it appears most feasible initially to file registered organization capability data alphabetically by registrants' names. Ultimately the QDRI supporting data, catalogs, and brochures will be indexed by means of the R&D Capability Index, as it comes into general use. Initially indexing by capabilities will appear only in the printed index published with each cartridge edition, and will utilize the terminology appearing in the DD Form 558-2 classification scheme. As registrations are updated using the new R&D Capability Index, actual file indexing of capabilities according to subject categories, equivalent to the present VSMF product indexing, will be instituted.

Integration of VSMF Questionnaires and QDRI Forms

As the QDRI Microfilming project approaches the point where all initial microfilming of existing files has been accomplished, there will be a requirement for VSMF to prepare a combined resurveying activity which would possibly use both the type of data in the present

VSMF questionnaire (see Appendix 3) and the Army's R&D Capability Index survey forms (see Appendices 1 and 2). At least for those organizations who are interested in both VSMF and QDRI a combined operation appears feasible, and should satisfy industry requests for reduction in government related surveys.

Methods for Selling VSMF and the QDRI Microfilm

The VSMF normal operations are financed in two ways. Although VSMF does add certain selected types of data to the files without charge, in general each vendor makes a small annual payment, based on a page rate, for the inclusion of his product catalog data. In addition, each subscriber pays for the microfilm cartridges he receives. The annual charge for this ordinarily includes complete quarterly replacement of all cartridges, although this does not mean that all data in each cartridge is changed quarterly. Based on FY 1966 prices the cost of three standard VSMF files, exclusive of the reader-printer would be:

(1) Vendor Selector Edition - $2,552

(2) OEM Edition - $4,230

(3) Defense Edition - $4,106

Reference may be made to the VSMF Authorized Federal Supply Schedule, FSC Group 67, Part IV, Photographic Equipment Contract No. GS-00S-60369 for descriptions of file contents.

QDRI FUTURE REQUIREMENTS

The plan for QDRI data files microfilming is to film all of the data obtainable from the deactivated Army procurement districts, supplemented by data from command and installation files, until as complete a record is obtained as possible for the identification of organizations who have ever been registered in the QDRI program, and their

status at the time of filming. Simultaneously, it is anticipated that the organization registration files of the RODATA will be brought up to date and that full coordination can be achieved between VSMF and RODATA. During this same period Army registrations using the new DOD/NASA format for the R&D Capability Index will be initiated, so that during the last phase of microfilm development it should be possible for microfilming (VSMF), data processing (RODATA), and automated bidders list operations (CAPS)[5] to become completely interchangeable.

When this point is reached it is expected that civilian organization registrations will be conducted as follows:

1. Registration packages consisting of a letter of instructions, mission statements on all commands, laboratories and installations, and the R&D Capability Index will be made available to all DCASR and Army small business specialists, industry liaison offices, and other offices involved in the preparation of R&D source lists. These offices will become referral agencies both to the QDRI program and the Army's procurement activities.

2. In general, each organization registering will send completed copies of its registration package to all appropriate major Army procurement offices, as advised by the referral agency with which it dealt. These offices will include the Northwest and Southwest Procurement Agencies and should include the procurement detachments, as long as they remain active. In addition, one copy of the registration will be sent to the RODATA and one to VSMF.

3. There will be communication between RODATA and VSMF, on a daily basis if necessary, to coordinate registration data. It is considered possible that eventually all organizations recorded on any Army R&D source list will be represented on VSMF cartridges.

4. It will be the responsibility of VSMF to obtain, index, and microfilm all types of catalog data. The new instructions supplementing the SF 129 for R&D source list data provides for minimum submission of supporting data with the registration package (see Appendix 1).

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[5] CAPS is the Army Data System called Command Automated Procurement System.

Pilot Microfilming Task

As mentioned previously, the first experimental microfilming operation involved the files of the Boston Procurement District. This work was issued to VSMF from Hqs., USAMC, through the Harry Diamond Laboratories, under Purchase Order PO-49-186-06-17879 on 23 June 1966. The Boston file was shipped from Natick Laboratories in eight cartons. In addition, three cartons of files from Frankford Arsenal representing Boston district registered organizations were delivered. Both sets of cartons are merged at Englewood and the most up-to-date data was selected from both.

The following guidance was given for selection and ordering of desired data:

"The basic qualifications data file on each QDRI registered organization will be reproduced on film in a microfilm cartridge library system for use as a visual search microfilm file, and will be made available in a system similar in use to the VSMF Vendor Selector presently supplied by Information Handling Services, Inc. (IHS), under GSA Contract GS-00S-50567. Each file will consist of the following minimum segments:

a. Government forms (DD Form 558-2 series, or equivalent) providing the areas of interest and capabilities of registered organizations.

b. Individual resumes or profiles of key scientific and technical personnel.

c. Descriptions of research and development facilities (buildings, test areas, equipment) of registered organizations.

d. Listings of recent and current contracts related to claimed areas of capability.

e. Brief descriptions of related "in-house" research and development efforts.

f. An accurate copy of the latest valid policy agreement for the QDRI program, or earlier related program (US Army R&D Problems Guide, or Army Study Requirements, etc.).

g. A statement signed by an Army representative verifying the organizations's security status, accuracy of items a to f, above, the name and correct address of the organization's QDRI Coordinator, any special condition established by the registered organization in its registrations, and a list of AMC installations holding the registration."

This guidance was developed for VSMF cartridges in the following six groups:

1. Facility Security Status
2. Latest Valid Policy Agreement
3. DD Form 558-2 Series or Equivalent
4. Resume and Profiles
5. Listings of Contracts
6. Descriptive Catalog Pages.

Figure 2 shows the form of the index at the start of each QDRI cartridge listing these six elements across the top of the index. The referral on the matrix is to the microfilm frame on which the desired data starts. Figures 3 to 8 show the standardized header sheets which start these sections (The frame number (F/N) does not appear on the original film, but as an indicator between frames, e.g., 0101.) Technical review during the course of execution of the pilot order led to the conclusion that the header form for the first section of data was unsatisfactory. It was later changed to the title "Registered Organization Verification Status", and its format, slightly different from those of the other sections, is shown by figure 9.

There were four microfilm cartridges developed from the combined Boston district files. These contain the records on 118 active organizations. In addition, VSMF prepared a printed index which had the following sections:

1. Alphabetic list of active registered organizations.
2. Alphabetic list of inactive and dropped organizations.

I N S T R U C T I O N S

for use of

QDRI FILMED INDEX

Each QDRI registrant's information has been separated into the following six categories for quick and easy access and retrieval:

1. FACILITY SECURITY STATUS
2. LATEST VALID POLICY AGREEMENT
3. FORM 558-2 SERIES OR EQUIVALENT
4. RESUMES AND PROFILES
5. LISTINGS OF CONTRACTS
6. DESCRIPTIVE CATALOG PAGES

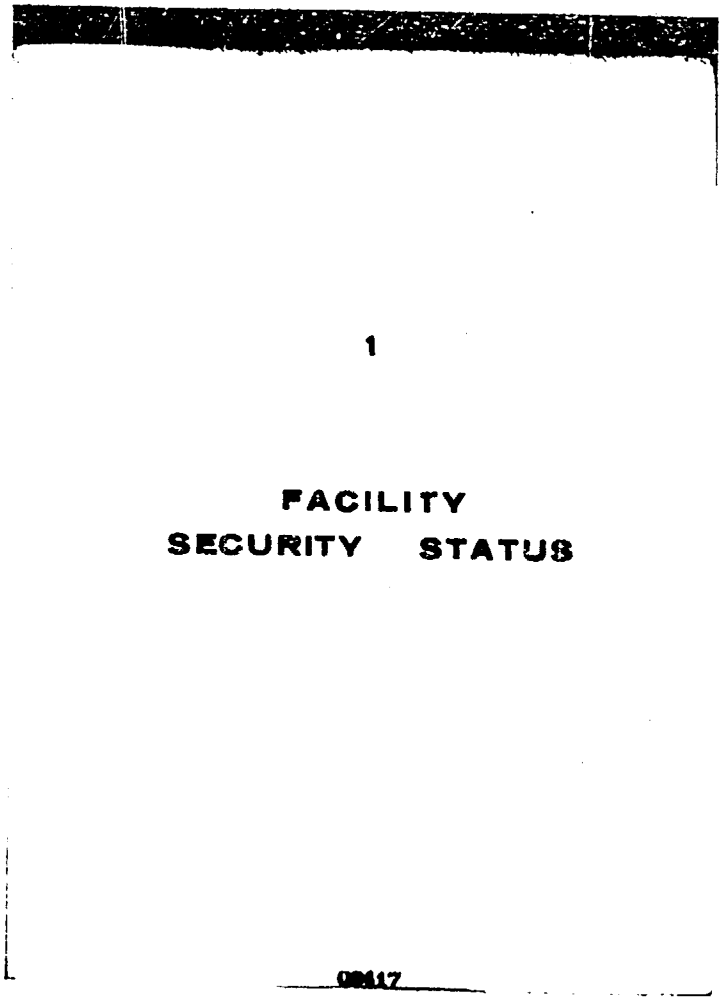
The number appearing in each column is the beginning film frame number for that category.

PLEASE NOTE

All six categories for a single QDRI Registrant are sequentially filmed.

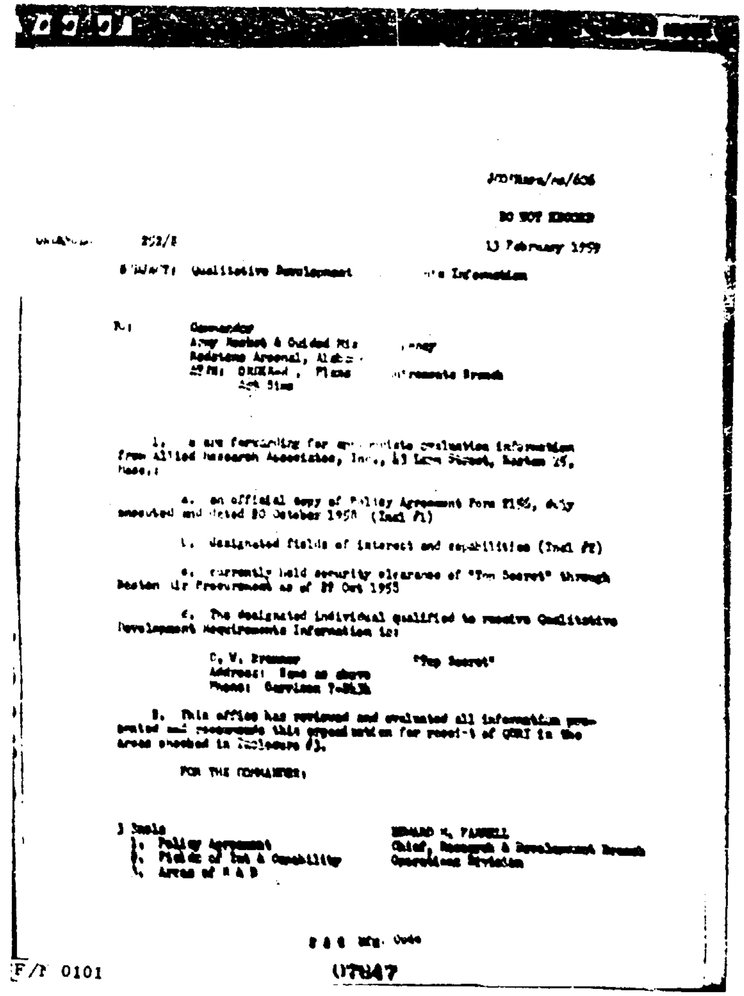
COMPANY NAME	1 FACILITY SECURITY STATUS	2 LATEST VALID POLICY AGREEMENT	3 FORM 558-2 SERIES OR EQUIVALENT	4 RESUMES & PROFILES	5 LISTINGS OF CONTRACTS	6 DESCRIPTIVE CATALOG PAGES
Organizational data has been divided into the following categories →						
ADCOM	100	103	106	111	123	126
AIR TECHNOLOGY CORPORATION	128	130	133	160	177	179
ALLIED RESEARCH ASSOCIATES INCORPORATED	192	194	197	236	296	359
AMERICAN BOSCH ARMA CORPORATION	361	363	366	382	386	384
AMERICAN MACHINE AND FOUNDRY COMPANY	388	390	393	441	445	445
AMERICAN OPTICAL COMPANY	447	449	452	476	483	486
AMERICAN SCIENCE AND ENGINEERING INCORPORATED	488	490	493	521	560	563
ANCO TECHNICAL WRITING SERVICES	565	567	570	575	577	584
ANDERSON-NICHOLS AND COMPANY	586	588	591	636	673	685
ARCON (ADVANCED RESEARCH CONSULTANTS)	687	689	692	721	727	729
ARMSTRONG RUBBER COMPANY	731	733	736	740	742	744
AVCO CORPORATION, RESEARCH AND ADVANCED DEVELOPMENT DIVISION	746	748	751	786	814	816
AVCO RESEARCH LABORATORIES	818	820	823	871	917	920
AVIDYNE RESEARCH INCORPORATED	922	924	927	952	961	963
BARKLEY AND DEXTER LABORATORIES INCORPORATED	965	967	970	993	1006	1006
BARNES ENGINEERING COMPANY	1008	1010	1013	1077	1128	1132
BIO-DYNAMICS INCORPORATED	1243	1246	1249	1295	1301	1303

Figure 2. QDRI Cartridge Index Format


1

FACILITY
SECURITY STATUS

08417


[illegible] 13 February 1959

SUBJECT: Qualitative Development [illegible] Information

TO: Commander
Army Rocket & Guided Mis[illegible]
Redstone Arsenal, Ala[illegible]
ATTN: [illegible]

1. [illegible] are forwarding for [illegible] evaluation information from Allied Research Associates, Inc., 43 [illegible] Street, Boston [illegible], Mass.:

a. an official copy of Policy Agreement Form [illegible], duly executed and dated 30 October 1958 (Incl #1)

b. designated fields of interest and capabilities (Incl #2)

c. currently held security clearance of "Top Secret" through Boston Air Procurement as of [illegible] Oct 1955

d. The designated individual qualified to receive Qualitative Development Requirements Information is:

C. V. [illegible] "Top Secret"
Address: Same as above
Phone: [illegible]

2. This office has reviewed and evaluated all information presented and recommends this organization for receipt of QDRI in the areas checked in Inclosure #3.

FOR THE COMMANDER:

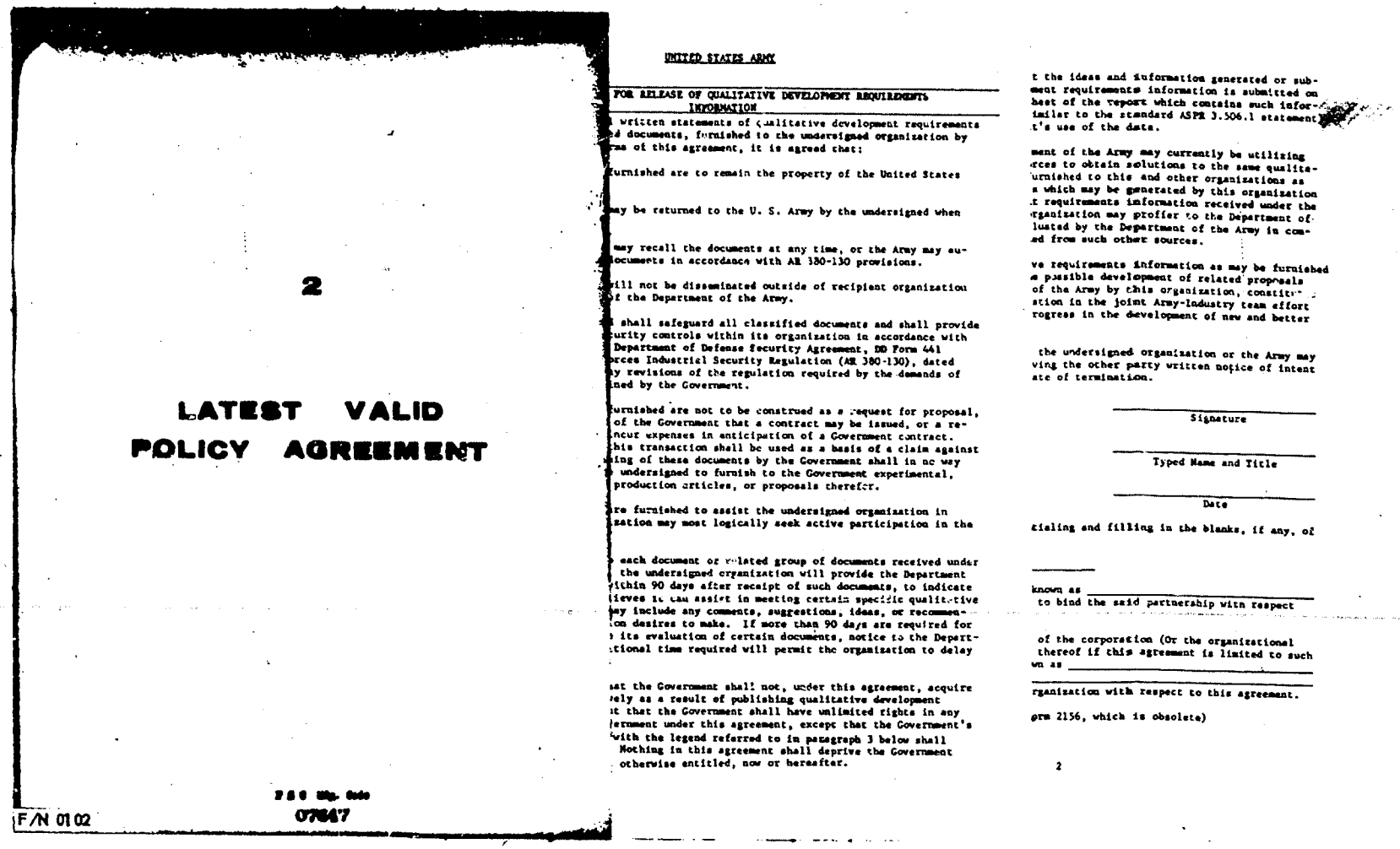
3 Incls
1. Policy Agreement
2. Fields of Int & Capability
3. Areas of R & D

[illegible]
Chief, Research & Development Branch
Operations Division

R & D Mfg. Code
07847

F/T 0101

Figure 3. Header Sheets and Sample Data, Section 1



2

LATEST VALID
POLICY AGREEMENT

F/N 0102

076647

UNITED STATES ARMY

FOR RELEASE OF QUALITATIVE DEVELOPMENT REQUIREMENTS INFORMATION

written statements of qualitative development requirements
d documents, furnished to the undersigned organization by
me of this agreement, it is agreed that:

furnished are to remain the property of the United States

ay be returned to the U. S. Army by the undersigned when

may recall the documents at any time, or the Army may au-
documents in accordance with AR 380-130 provisions.

ill not be disseminated outside of recipient organization
f the Department of the Army.

shall safeguard all classified documents and shall provide
urity controls within its organization in accordance with
Department of Defense Security Agreement, DD Form 441
rces Industrial Security Regulation (AR 380-130), dated
y revisions of the regulation required by the demands of
ined by the Government.

furnished are not to be construed as a request for proposal,
of the Government that a contract may be issued, or a re-
ncur expenses in anticipation of a Government contract.
his transaction shall be used as a basis of a claim against
ing of these documents by the Government shall in no way
undersigned to furnish to the Government experimental,
production articles, or proposals therefor.

re furnished to assist the undersigned organization in
zation may most logically seek active participation in the

each document or related group of documents received under
the undersigned organization will provide the Department
ithin 90 days after receipt of such documents, to indicate
ieves it can assist in meeting certain specific qualitative
ay include any comments, suggestions, ideas, or recommen-
on desires to make. If more than 90 days are required for
its evaluation of certain documents, notice to the Depart-
tional time required will permit the organization to delay

at the Government shall not, under this agreement, acquire
ely as a result of publishing qualitative development
it that the Government shall have unlimited rights in any
ernment under this agreement, except that the Government's
with the legend referred to in paragraph 3 below shall
Nothing in this agreement shall deprive the Government
otherwise entitled, now or hereafter.

t the ideas and information generated or sub-
ment requirements information is submitted on
best of the report which contains such infor-
imilar to the standard ASPR 3.506.1 statement
t's use of the data.

ment of the Army may currently be utilizing
rces to obtain solutions to the same qualita-
urnished to this and other organizations as
s which may be generated by this organization
t requirements information received under the
rganization may proffer to the Department of
lusted by the Department of the Army in com-
ed from such other sources.

ve requirements information as may be furnished
s possible development of related proposals
of the Army by this organization, constitu-
stion in the joint Army-Industry team effort
rogress in the development of new and better

the undersigned organization or the Army may
ving the other party written notice of intent
ate of termination.

Signature

Typed Name and Title

Date

cialing and filling in the blanks, if any, of

known as
to bind the said partnership with respect

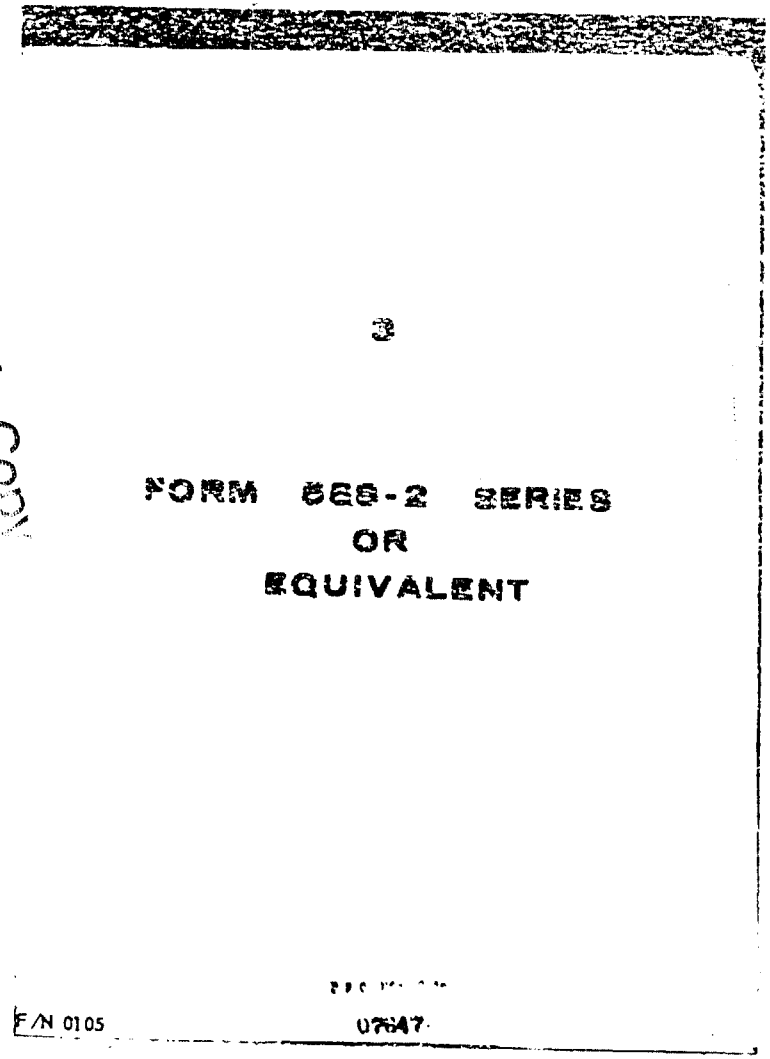
of the corporation (Or the organizational
thereof if this agreement is limited to such
on as

rganization with respect to this agreement.

orm 2156, which is obsolete)

2

Figure 4. Header Sheets and Sample Data, Section 2



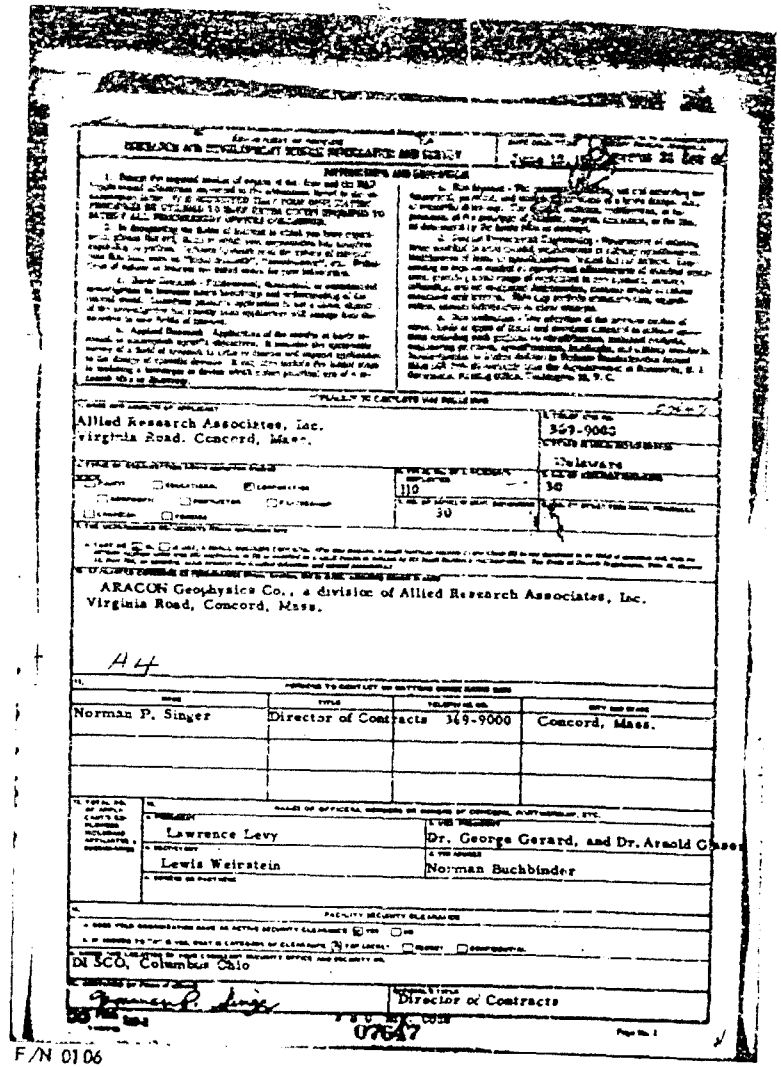


Figure 5. Header Sheets and Sample Data, Section 3

4

RESUMES AND PROFILES

F/N 0120

PRC Mfg. Code

07647

ALLIED RESEARCH ASSOCIATES, INC. — BOSTON 10, MASSACHUSETTS

DR. PHILIP GOODMAN

Dr. Philip Goodman, Senior Scientist, is a member of the staff of the Materials Department and is presently engaged in studies of the relationship between time-dependent mechanical properties of materials and their molecular structure. These studies include both relaxation phenomena and steady-state flow behavior of ceramics and semi-crystalline systems. Other related or subsidiary areas of activity are concerned with the temperature dependence of dynamic modulii and with the behavior of highly reactive, high temperature, molecular species.

Dr. Goodman received a Bachelor of Arts Degree from New York University in 1943. After serving with the Air Force during World War II, during part of which time he was an instructor in Chemistry, he attended the University of Chicago where he received a Master of Science degree. Subsequent academic training was undertaken at the Ohio State University where he held several research fellowships as well as teaching assistantships. His thesis was concerned with the structure of polyelectrolyte molecules in solution. A Doctor of Philosophy degree in physical chemistry was awarded in 1951.

Upon graduation, Dr. Goodman joined the staff of the National Bureau of Standards where he was a project leader doing research on the rheological properties, molecular structure and kinetics of mechanical degradation of synthetic rubbers and aluminum soap gels. He later moved to the laboratory of the U. S. Naval Powder Factory where he was head of the Structure and Properties Section. His research interests were concerned with the relationship of molecular structure and semi-crystallinity to relaxation processes and flow behavior of cellulose esters.

In 1956, Dr. Goodman joined the Corning Glass Works where he supervised a group and performed research concerned with a wide variety of properties of silicate glasses and glass-ceramics. These included studies of viscoelastic behavior of glasses in the transition regions, viscous properties of glasses at high temperatures, solid-state physics studies of nucleation and growth, phase transformation occurring in semi-crystalline glasses and influences of crystalline inclusions upon the physical properties of an amorphous system.

Dr. Goodman has published several technical papers and, during his tenure at Corning Glass Works, lectured to several local sections of scientific societies. He is a member of the American Chemical Society, American Physical Society, Society of Rheology and American Association for the Advancement of Science.

F/N 0191

PRC Mfg. Code

07617

Figure 6. Header Sheets and Sample Data, Section 4

5

LISTINGS OF CONTRACTS

F/N 0192

F S C Mfg. Code
07647

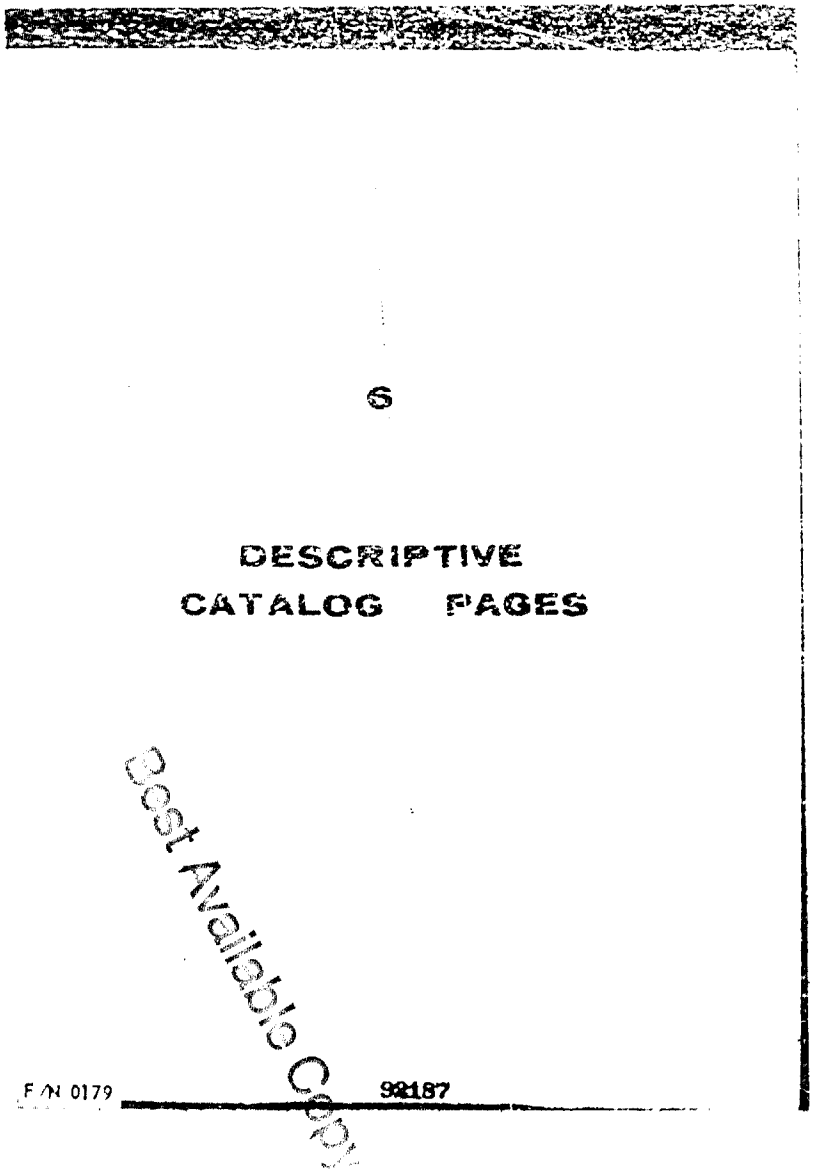
ALLIED RESEARCH ASSOCIATES, INC. — BOSTON 18, MASSACHUSETTS

Contract Description	Year Awarded	Client
Turboprop airliner evaluations	1955	American Airlines
Development of a liquid analog of the atmosphere	1955	Air Force Research Division, Geophysics Research Directorate
Evaluation of the Burnelli CBY-3 aircraft	1955	Air Trends, Incorporated
Vibration isolation system for Skipper	1955	Massachusetts Institute of Technology, Instrumentation Laboratory
LABS delivery studies	1955	Wright Air Development Division, Weapons Guidance Laboratory
Analysis, design, development and testing of very fast response bolometer to measure thermal radiation	1955	Air Force Research Division, Geophysics Research Directorate
Heat transfer problem	1955	Cambridge Corporation
Specialized studies in the utilization of high energy fuels for long range aircraft	1955	Cambridge Corporation
Vibration analysis of 5 liter Dewar flask	1956	Cambridge Corporation
Development of vibration isolation system for Thor guidance equipment	1956	AC Spark Plug
Fabrication of Spire vibration isolators (4)	1956	Massachusetts Institute of Technology, Instrumentation Laboratory
Shock and vibration analysis of 15 gallon Dewar flask	1956	Cambridge Corporation
Design and development of expendable wind measuring missiles (Wind-Sonde System)	1956	Wright Air Development Division, Aerial Reconnaissance Laboratory
Dynamic analysis of TV tower	1956	Magnesium Products of Milwaukee
Development and fabrication of a radiation monitoring system	1956	Yankee Atomic Electric Company

F/N 0194

F S C Mfg. Code
07647

Figure 7. Header Sheets and Sample Data, Section 5



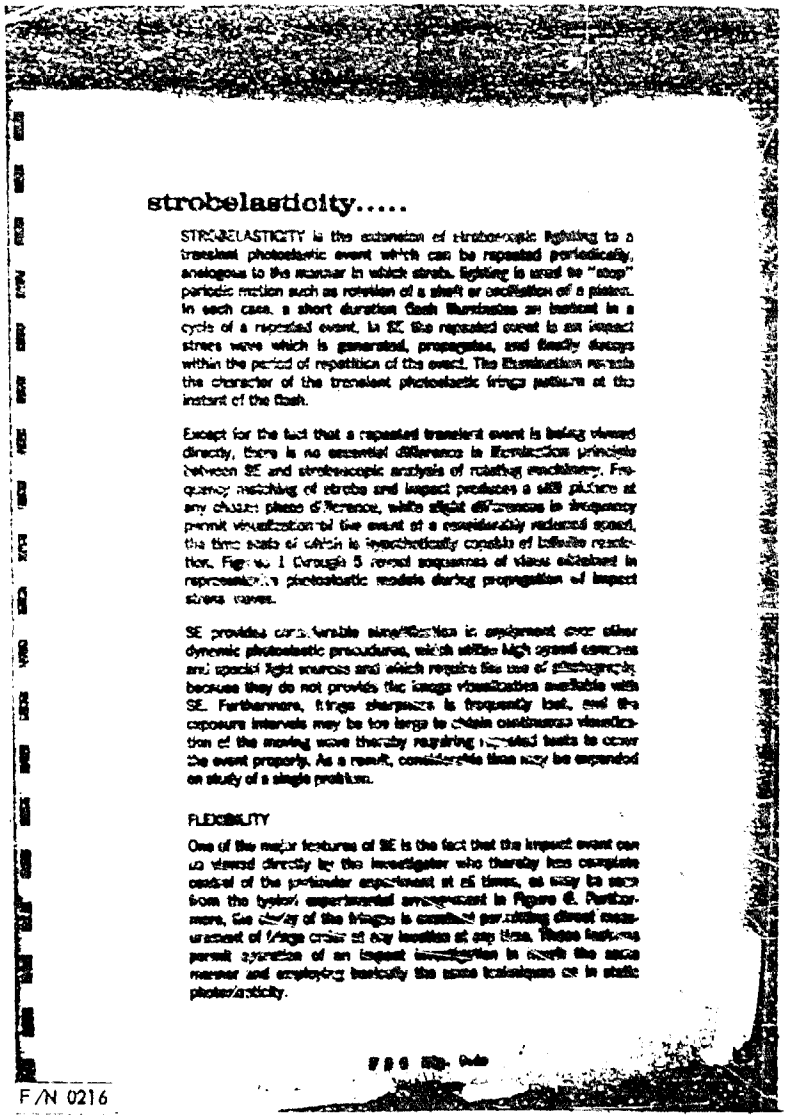
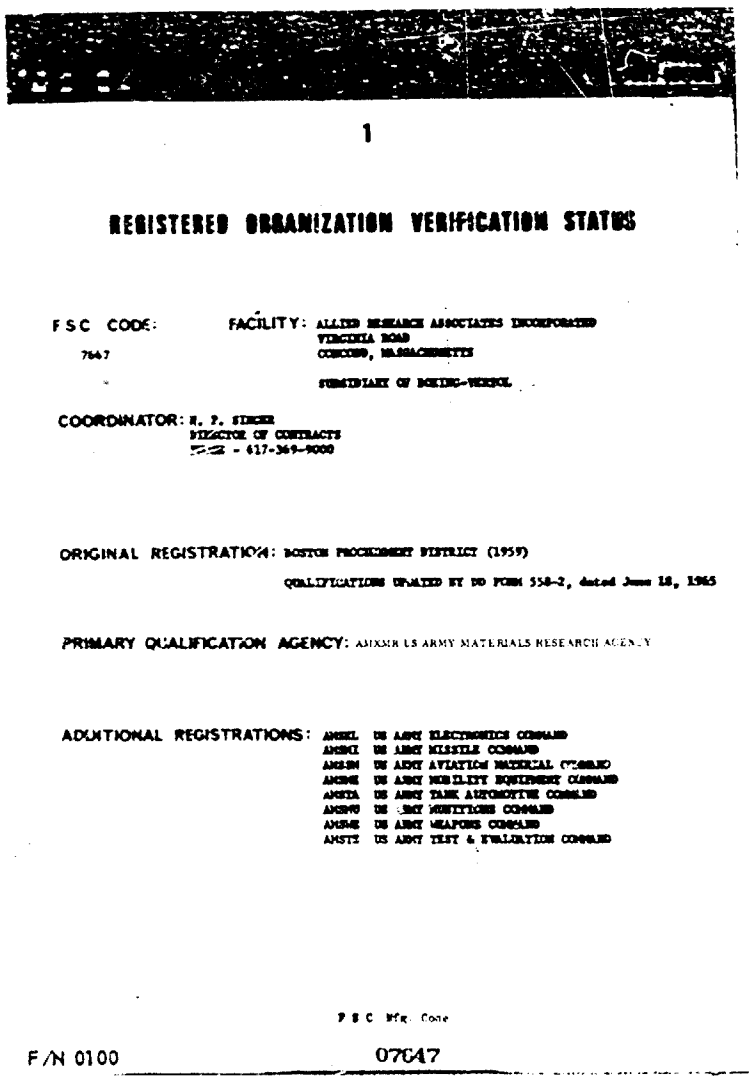


Figure 8. Header Sheets and Sample Data, Section 6



1

REGISTERED ORGANIZATION VERIFICATION STATUS

FSC CODE: 7647

FACILITY: ALLIED RESEARCH ASSOCIATES INCORPORATED
VIRGINIA ROAD
CONCORD, MASSACHUSETTS

SUBSIDIARY OF BOEING-VERSOL

COORDINATOR: H. P. STECHER
DIRECTOR OF CONTRACTS
TWX - 617-369-9000

ORIGINAL REGISTRATION: BOSTON PROCUREMENT DISTRICT (1959)

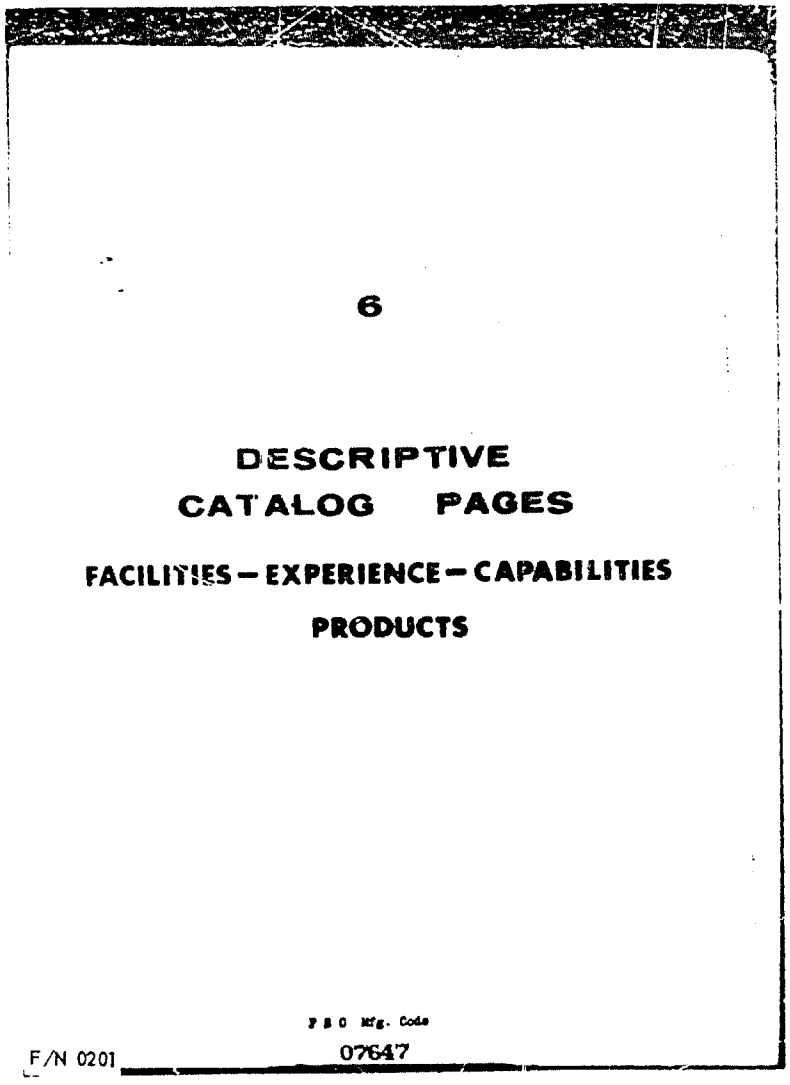
QUALIFICATIONS UPDATED BY DD FORM 558-2, dated June 18, 1965

PRIMARY QUALIFICATION AGENCY: AMXMR US ARMY MATERIALS RESEARCH AGENCY

ADDITIONAL REGISTRATIONS: AMSEL US ARMY ELECTRONICS COMMAND
AMSMI US ARMY MISSILE COMMAND
AMSAV US ARMY AVIATION MATERIAL COMMAND
AMSME US ARMY MOBILITY EQUIPMENT COMMAND
AMSTA US ARMY TANK AUTOMOTIVE COMMAND
AMSMU US ARMY MUNITIONS COMMAND
AMSWE US ARMY WEAPONS COMMAND
AMSTE US ARMY TEST & EVALUATION COMMAND

P S C Mfg. Code

F/N 0100 07647



6

DESCRIPTIVE
CATALOG PAGES

FACILITIES – EXPERIENCE – CAPABILITIES

PRODUCTS

P S C Mfg. Code

F/N 0201 07647

Figure 9. Revised Header Sheets, Sections 1 and 6

3. Index of research and development capabilities (not printed).

The cartridges were provided in two sets, to fit both the Recordak and Filmac reader-printers. Demonstrations of these cartridges were provided at the NSIA meeting in Washington, D. C. on 6 October 1966, and the annual meeting of the Association of the U. S. Army during 10 to 12 October 1966. The pilot purchase order operations are described in a final report from Information Handling Services, Inc., dated 25 October 1966, titled "Information Handling Services Report and Recommendations on The Qualitative Development Requirements Information File Produced for the U. S. Army Materiel Command". This report is to be reworked slightly and published for distribution to all QDRI managers and to the Defense Documentation Center.

REVIEW OF PILOT TEST RESULTS

It has already been mentioned that a change in the title and format of the first section of each organization's file was made. This change was to "Registered Organization Verification Status".

It was made during a process inspection at Englewood on 22 and 23 September 1966. At the same time the title of section six was changed from "Descriptive Catalog Pages" to "Descriptive Catalog Pages

Facilities - Experience - Capabilities

Products".

Some other minor changes were also made as mentioned in the VSMF 25 October 1966 report:

1. The index cover was reprinted to show that data came from the Boston Procurement District.

2. Both VSMF and QDRI were shown on all frames on the platen header. The Boston file was identified as "Issue No. 1".

3. Page 2 of the DD Form 558-2 was filmed only once in the front matter of each film cartridge. This is the page providing the instructions for use of the form.

4. Some rearrangement was made in the material filmed for each section. For instance, considerable material which VSMF had placed in Section 3 as equivalent to Form 558-2 data, was removed to Section 6, to be placed under the subtitle "Capabilities".

These changes were all incorporated in an extra set of cartridges, one Recordak and one Filmac, for just one Boston facility. Key frames from this are reproduced in Appendix 4.

In general, the results obtained in the pilot test form a satisfactory base for the continuation of the microfilming program. The final sample provided by Cartridge 5 appears to be very close to the format desired by the Army.

There is one major exception to the existing concept that now appears obtainable. With the completion of the combined DOD/NASA R&D Capability Index based on the COSATI Subject Categories, it now become possible to index interests and capabilities uniformly by an automated system. It is therefore recommended that Section 6 data from the descriptive catalog pages be indexed and filmed in the order of the R&D Capability Index. This, of course, will change somewhat the plans that VSMF has made, but it should not appreciably delay the program, or add materially to its costs.

PROPOSED VSMF PROCEDURE FOR QDRI FILES

Section III of the VSMF final report on the QDRI Pilot Test, pages 5 to 8, gives the Information Handling Services recommendations for expanded microfilm activities and estimated costs for the total operation. These recommendations are based on the assumption that all active and inactive QDRI files from the former Army procurement districts will be transferred to Englewood, Colorado for sorting, processing, indexing, and microfilming. Figure 10 provides a flow chart of the VSMF proposed procedure.

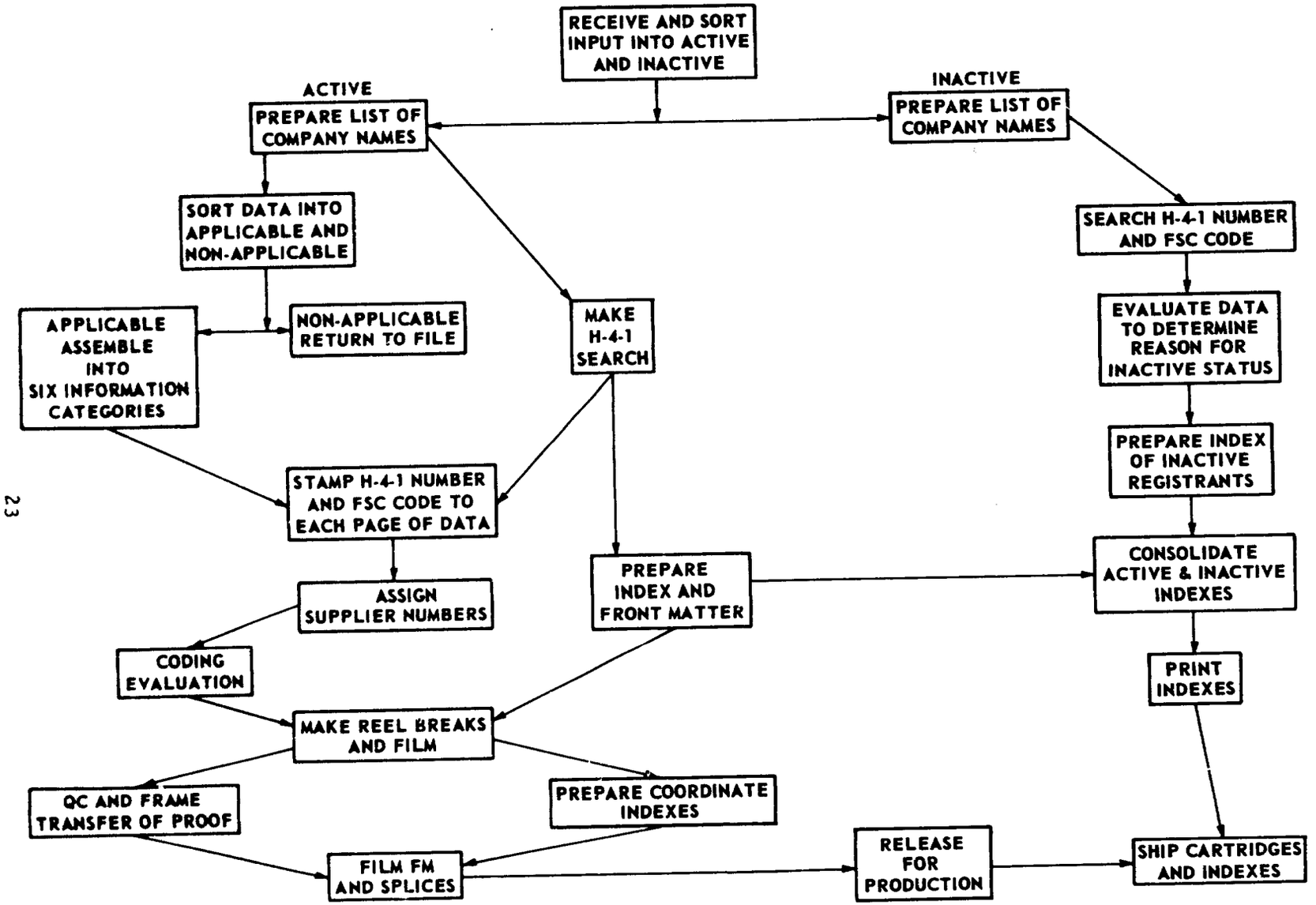


Figure 10. Flow Chart - VSMF Proposed Procedure

Based on the Boston district test the costs for microfilming the expanded file are estimated for handling the files from twelve locations or groups: Birmingham, Boston, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, Philadelphia, Rochester, New York, San Francisco, and St. Louis. Chicago, Cincinnati, and New York represent active Procurement Detachments in the Army Materiel Command. The New York Detachment is also holding the Philadelphia and Rochester files. Los Angeles and San Francisco have become the Soutwest and Northwest Procurement Agencies, respectively. At all of the other procurement district locations the activities have been transformed into DCASR offices. The status of QDRI files at Birmingham, Cleveland, and St. Louis is very nebulous. VSMF has estimated that there will be approximately 1,298 active registered organizations and 3,113 inactive organizations. Initial filming and preparation of printed index master copy will cost about $35,500.00, based on the above assumption. Diazo reproduction film cartridges, and printed indexes for each QDRI office in the Army Materiel Command will cost about $250.00 each; and based on an estimated possibility of 40 locations this cost would be $10,000.00. The total initial estimated cost of the microfilming program would therefore be $45,500.00.

This is not the entire consideration. Not all QDRI offices would want microfilm, at least not immediately. Also, not all locations have cartridge reader-printers readily available. The rental of a reader-printer is quoted at $864.00 a year, and its purchase direct is about $2,700.00. Neither of these figures includes supplies of paper, developer, and other incidental items required with a reader-printer.

The VSMF plan includes referencing of the printed index to both the VSMF Defense and Vendor Selector files for QDRI organizations represented therein. Also, training sessions in the use of the system will be conducted at each using location by contractor personnel.

VSMF has not made any firm estimate on the costs for keeping files updated on a quarterly basis, to match updating of the Vendor Selector and Defense files. It is suggested that the unit costs used for active registered organizations would be approximately correct.

ARMY RECOMMENDATIONS FOR CONTINUING PROGRAM

There are still several matters to be negotiated between the Army and the supplier. Practically all are either development of firm procurement requirements, or definitive prices for all requirements, which will have to be negotiated by a contracting officer. This entire report and the VSMF report of 25 October, 1966 will together form the basis for the total procurement. The following major points, most of which have already been discussed herein, will provide the major points of procurement requirements:

1. Microfilming will be accomplished to match existing VSMF files, and will include all organizations registered in the QDRI program by 30 June 1967. Files may be arranged completely alphabetically, but should also illustrate, either in the cartridge format, or the printed index, the original district arrangement of registrations.

2. In addition to indexing by organization name, alphabetically, indexing will be performed by subject categories in fields of interest (disciplines, capabilities, experience, facilities, and products) according to the R&D Capability Index based on the COSATI Subject Categories.

3. A questionnaire will be designed and tested in actual use to obtain regular updating of microfilmed data.

4. Hqtrs., US Army Materiel Command, through the AMC QDRI Data Files Program Action Officer, will finance the initial filming of each organization now on file, and others as they come into the program. The basic contract will also cover the purchase of microfilm reel sets at six to eight major QDRI activities. The microfilming company will be expected to execute separate sales contracts for microfilm cartridge sets with all other QDRI offices. Ultimately, VSMF should be able to develop a financing system similar to that now operating with the VSMF Defense and Vendor Selector files.

5. VSMF will develop specific criteria for the selection and indexing of catalog and brochure data.

6. Liaison will be continually maintained with the master organization registration data file in the RODATA at Frankford Arsenal. Toward this end, in order to achieve data compatibility, the RODATA

will provide VSMF with print-outs of registration listings, clear copies of the latest policy agreement, and H4-1 FSC manufacturers codes or other identification codes and data, as required.

7. Close coordination will also be maintained with other contractors providing technical publications services for the RODATA, and programming or other softwear.

8. VSMF, RODATA, and RODATA contractors will develop joint publicity programs. Each organization will finance its own fair share of such programs.

9. An equitable arrangement will be negotiated by the government and VSMF for the use of VSMF copyrighted material. VSMF will not be allowed to copyright indexes, systems, or data formats which are of government preparation, collection, or design.

10. The QDRI cartridges should be identified by a Q-series of numbers.

Finally, it is important that all activities involved in the QDRI data process should be guided by a uniform, although somewhat flexible, procedure. The outline of this procedure is presented in flowchart format by figure 11. The main actions illustrated are

1. Inquiry by new registrant
2. Explanation of procedure/referral office
   a. Distribution of registration package
   b. Referral to appropriate agencies
3. Preparation and forwarding of registration documents
4. Qualification by USAMC QDRI offices
5. Addition of registration to RODATA master file
6. Addition of data to VSMF file
7. Comparison and reconciliation of RODATA and VSMF

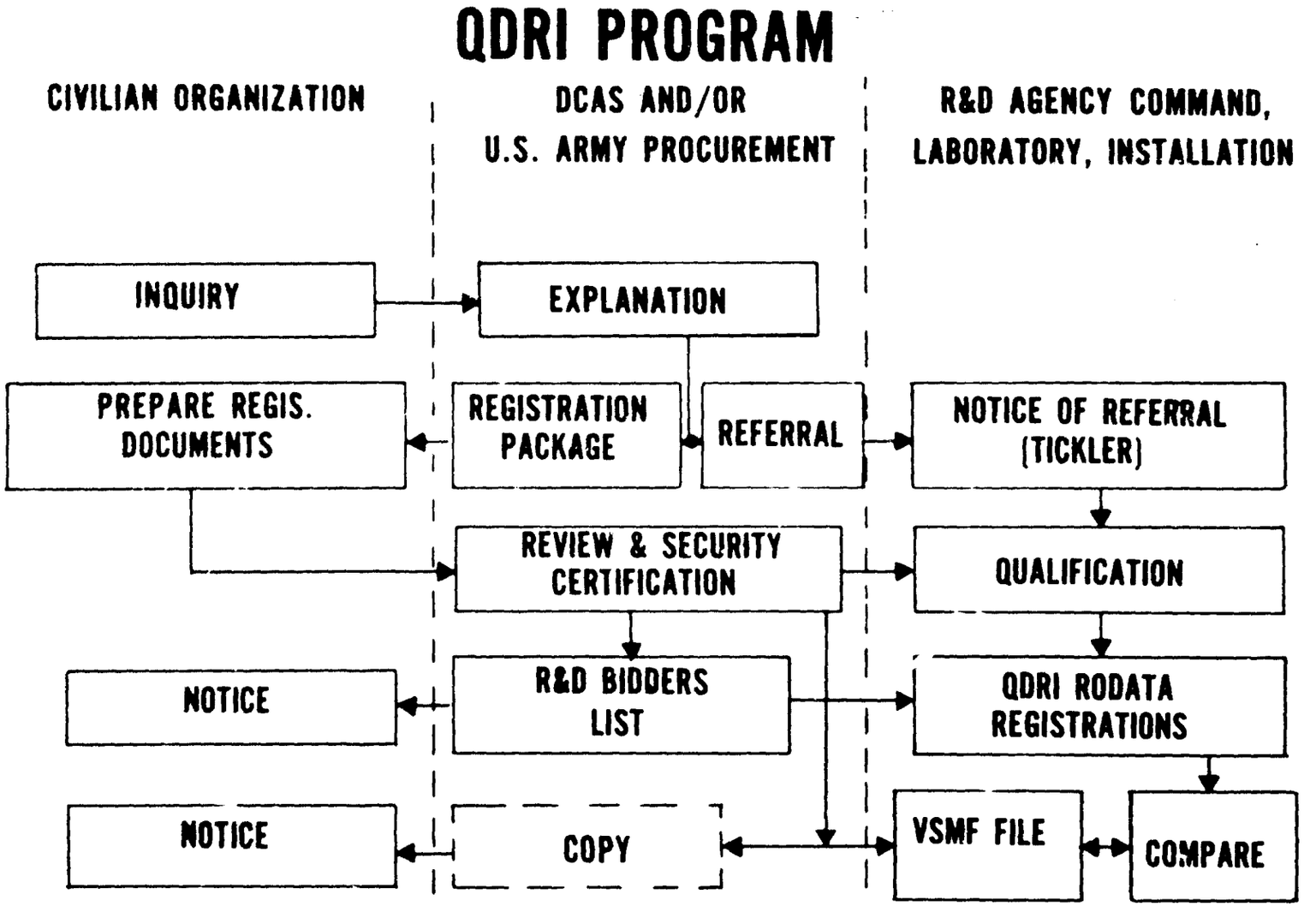


Figure 11a. Flow Chart - QDRI Data Procedure, Registration

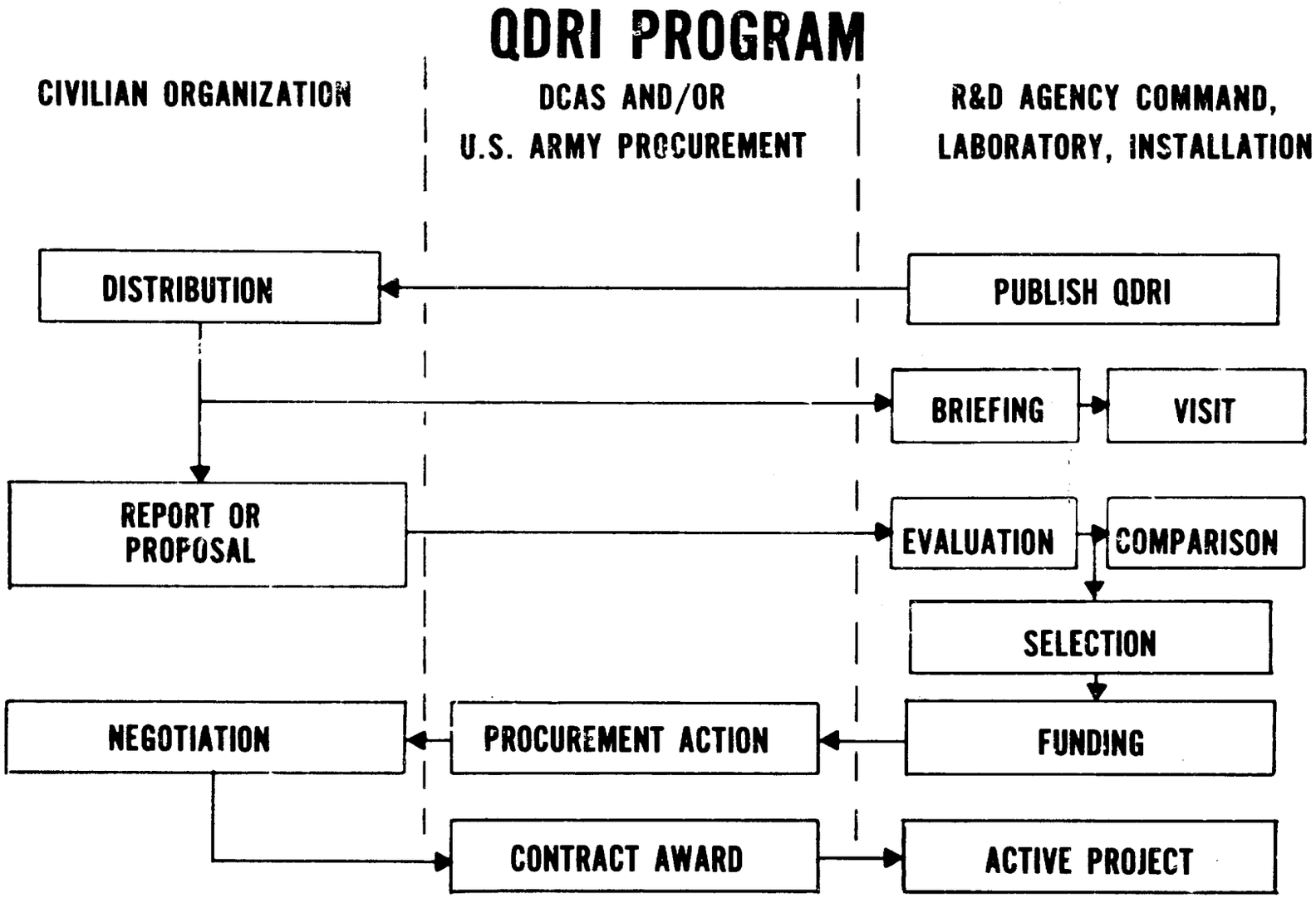


Figure 11b. Flow Chart - QDRI Data Procedure, Distribution

8. Preparation of QDRI items

9. Distribution of QDRI publications

10. Project and task QDRI briefings

11. Preparation of reports and proposals

12. Distribution of reports and proposals

13. Evaluation of reports and proposals

14. Comparison of old and new proposals

15. Selection of most likely results

16. Determination of appropriate funding

17. Initiation of procurement action

18. Award of definitive contract

CONCLUSION

The VSMF microfilming activity is recognized as a good currently operating workable solution for the storage and retrieval of QDRI documentation. It is probably not the ultimate system that will be associated with QDRI. The Army's scientific and technical information program is studying other methods, especially those associated with computer-oriented retrieval systems. However, none of the attractive methods are yet operational. The VSMF operation is commercially available and satisfies present QDRI needs.

REFERENCES

1. AMCR 70-19, 13 October 1964
2. QDRI Volume I, January 1965
3. Contract GS-00S-60369
4. VSMF report, 25 October 1966

APPENDIX 1

FRANKFORD ARSENAL REPORT R-1838

INSTRUCTIONS FOR

R&D CAPABILITY INDEX USE

Presented to the ASPR Committee

by ASPR Subcommittee, Case 66-151, on

30 January 1967

UNITED STATES ARMY MATERIEL COMMAND
R&D CAPABILITY INDEX

INSTRUCTIONS FOR PREPARING SUPPLEMENT
TO STANDARD FORM 129
for
R&D BIDDERS LISTS OR
INFORMATION PROGRAMS

NAME OF APPLICANT	DATE

In designating your organization's technical fields of capability (see attached R&D Capability Index), indicate only those fields in which you possess technical competence.

It is to your advantage to take a realistic approach regarding your capabilities. Each area of capability indicated is reviewed and an unrealistic approach based on interest and not capability will only delay evaluation of your source data. Indicate by check mark the category of competence your organization has, such as "research," "exploratory development," etc. Definitions are set forth in ASPR 4-201.

Documentation

Your supporting documentation should be arranged and indexed in the same number sequence as the technical fields, as set forth in the attached R&D Index, and is expected to describe the capabilities of your technical personnel, R&D facilities, and in-house and contractual project experience. In general, it is anticipated that an average of five pages of documentation are appropriate for each field. Brevity of submission will insure expeditious handling. For example:

Personnel:

Will include the names and brief statement of scientific and technical background and achievements of your leading R&D personnel who may be principal investigators or project officers for R&D contracts. List each person only once even though his ability may pertain to more than one technical field.

Facilities:

Will include brief description of all major physical facilities for research and development. List each physical facility only once even though it may pertain to more than one technical field of interest and may be used by several organizational groups. Identify each facility by name and location. Give name and telephone number of person to contact for further information. Detailed equipment lists are not desired.

Experience:

Data which is particularly desired is: A brief description of recent and/or current government and company sponsored R&D programs (will include applicable

UNITED STATES ARMY MATERIEL COMMAND
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INSTRUCTIONS FOR PREPARING SUPPLEMENT
TO STANDARD FORM 129
for
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INFORMATION PROGRAMS

NAME OF APPLICANT	DATE

contract number and total dollar value of each contract listed), and major breakthroughs in the state-of-the-art you have accomplished.

SF 129 and the attached R&D Index Form, including the required documentation, will constitute all source data necessary for an R&D source list. Any additional information, such as organizational brochures, folders, flyers, and pictures, are not acceptable. This does not preclude submission of Annual Reports or Financial Statements, which are desired.

To assure retention of your organization in our R&D source files, it is required that you update previously submitted information at least once a year. Minor changes may be submitted informally to the requesting agency.

NOTE: If your organization possesses capabilities in five or less fields, your documentation should not exceed 20–25 pages. If your organization possesses capability in all, or almost all, of the fields, no more than 100 pages of documentation will be accepted.

DEFINITIONS OF RDT&E CATEGORIES

The type of effort which research and development organizations devote to specific technical fields is to be shown in one or more of the following six categories:

Research - which is the acquisition of knowledge and the quantitative understanding of phenomena. This category includes basic and applied research in the physical, biological, environmental, medical, behavioral, social, management, informational and engineering sciences including the technical means for obtaining the knowledge.

Exploratory Development - which is demonstration by experiment of the technical feasibility of alternative inventive concepts. Exploratory development may concern itself with materials, components, processes, equipment, subsystems or systems, and may encompass any of three distinct types of effort:

a. Experimental exploitation and refinement of known phenomena.

NAME OF APPLICANT	DATE

b. Development of technologies responsive to a class of systems, or broad end-item needs.

c. Preliminary system studies responsive to a particular problem. These studies should explore the potential operational utility and the technical feasibility of alternative generic solutions to the problem. These preliminary studies may include system analyses, tradeoff, preliminary cost/effectiveness studies and planning and programming studies.

Advanced Development - which is demonstration of the acceptability of the technical, economic, and operational characteristics of one or more specific concepts considered as solutions to a clearly stated problem or technical objective. It requires synthesis and construction of experimental hardware for acceptability demonstration of the concepts. This hardware is not developed for procurement, inventory, or operational deployment. Advanced development may concern itself with materials, components, processes, equipment, subsystems or systems.

Engineering Development - which is the final development and test of a materiel item judged to be operationally, technically, and economically desirable and acceptable as a solution to a problem or to a technical objective. This category produces what have been generally known as the R&D pilot or engineering test pre-production models. Engineering development may concern itself with materials, components, processes, equipment, subsystems or systems. This category may include Engineering Development-type effort on separately identified major product improvement to inventory or to in-development materiel items.

Operational Development - which is the final engineering for production, producibility demonstration, and final service test of a materiel item approved for limited procurement to inventory and operational deployment. It supplements engineering development effort with a production engineering, producibility demonstration effort. Operational development may include the production design and building of preproduction prototypes on final tooling, utilizing all production processes and test equipment designated or designed and fabricated during Operational Development for full-scale production. Testing accomplished within this category's effort should concern the qualification of the production process and data as well as the final service qualification test for operation. This category may include operational development type effort on separately identified or aggregated major product improvements to materiel items in the inventory,

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NAME OF APPLICANT	DATE

or may include both engineering and operational development type effort on minor product improvements.

A primary output of this category is the preparation and demonstration through limited pre-production of a complete, accurate, and tested data package for operational use, logistic support, maintenance and for possible competitive reprocurement and breakout.

Management and Support - which are those general-purpose and multi-usage efforts and items to support the functions of research, development, test, and engineering. Emphasis in this category will be on multi-usage support activities. Items whose support is divisible into the elements of the other RDT&E categories will be included in those category elements. Examples of the type of items intended for management and support include the operations and maintenance of activities such as test ranges, test aircraft and ships and information support services as well as operational and maintenance support of government in-house laboratories.

UNITED STATES ARMY MATERIEL COMMAND
R&D CAPABILITY INDEX

INSTRUCTIONS FOR PREPARING SUPPLEMENT
TO STANDARD FORM 129
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INFORMATION PROGRAMS

NAME OF APPLICANT	DATE

Local installation or commodity center instructions as required by the registering agency may be added here.

STANDARD FORM 129 AUGUST 1952
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1.16.802 129-103

BIDDER'S MAILING LIST APPLICATION

☐ INITIAL APPLICATION
☐ REVISION

All answers should be typed or printed. See reverse for information and instructions.

TO:

DATE OF THIS APPLICATION

1. NAME OF APPLICANT

2. ADDRESS TO WHICH BIDDING FORMS ARE TO BE MAILED

3. ADDRESS OF MAIN BUSINESS OFFICE

4. HOW LONG IN PRESENT BUSINESS

5. TYPE OF ORGANIZATION (*Check one*)
☐ INDIVIDUAL ☐ PARTNERSHIP ☐ CORPORATION

6. IF INCORPORATED, INDICATE IN WHICH STATE

7. NAMES OF OFFICERS, MEMBERS OR OWNERS OF CONCERN, PARTNERSHIP, ETC.

(A) PRESIDENT

(B) VICE PRESIDENT

(C) SECRETARY

(D) TREASURER

(E) OWNERS OR PARTNERS

8. AFFILIATED CONCERNS (*Name, location, and in detail, controlling interest in each*)

9. PERSONS OR CONCERNS AUTHORIZED TO SIGN BIDS AND CONTRACTS IN YOUR NAME (*If agent, so specify*)

NAME	OFFICIAL CAPACITY

10. PERSONS TO CONTACT ON MATTERS CONCERNING BIDS AND CONTRACTS (*If agent, so specify*)

NAME	OFFICIAL CAPACITY	TELEPHONE NO.

11. INDICATE CLASSES OF EQUIPMENT, SUPPLIES, MATERIAL, AND/OR SERVICES ON WHICH YOU DESIRE TO BID (*Use attached list, if any*)

12. CATEGORY (*See definitions on the reverse of this form and check below the category which applies to the applicant*)
☐ (A) MANUFACTURER OR PRODUCER ☐ (C) REGULAR DEALER (*Type 2*)
☐ (B) REGULAR DEALER (*Type 1*) ☐ (D) SERVICE ESTABLISHMENT

13. NUMBER OF PERSONS NOW EMPLOYED	14. FLOOR SPACE (*Square feet*)		15. NET WORTH	
	MANUFACTURING	WAREHOUSE	DATE	AMOUNT

16. THIS SPACE FOR USE BY THE GOVERNMENT

17. I certify that the information supplied herein (*including all pages attached*) is correct and that neither the applicant nor any person (or concern) in any connection with the applicant as a principal or officer, so far as is known, is now debarred or otherwise declared ineligible by any agency of the Federal Government from bidding for furnishing materials, supplies or services to the Government or any agency thereof.

SIGNATURE OF PERSON AUTHORIZED TO SIGN THIS APPLICATION

18. NAME AND TITLE OF PERSON SIGNING (*Please type or print*)

INFORMATION AND INSTRUCTIONS

Persons or concerns wishing to be added to a particular agency's bidder's mailing list for supplies or services shall file this properly completed and certified Bidder's Mailing List Application, together with such other lists as may be attached to the application form, with each procurement office of the Federal agency with which they desire to do business. *The application shall be submitted and signed by the principal as distinguished from an agent, however constituted.*

After placement on the bidder's mailing list of an agency, a supplier's failure to respond (*submission of bid, or notice in writing that you are unable to bid on that particular transaction but wish to remain on the active bidder's mailing list for that particular item*) to Invitations for Bids will be understood by the agency to indicate lack of interest and concurrence in the removal of the supplier's name from the purchasing activity's bidder's mailing list for the items concerned.

CATEGORY DEFINITIONS

(See Item No. 12)

A. MANUFACTURER OR PRODUCER means a person (*or concern*) owning, operating, or maintaining a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment of the general character of those listed in item No. 11.

B. REGULAR DEALER (*Type 1*) means a person (*or concern*) who owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles, or equipment of the general character listed in item No. 11 are bought, kept in stock, and sold to the public in the usual course of business.

C. REGULAR DEALER (*Type 2*) in the case of supplies of particular kinds (*at present, petroleum, lumber and timber products, coal, machine tools, raw cotton, green coffee, or hay, grain, feed, and straw*) "REGULAR DEALER" means a person (*or concern*) satisfying the requirements of article 101 (b) of the regulations, as amended from time to time, prescribed by the Secretary of Labor under the Walsh-Healey Public Contracts Act (41 U. S. Code 35–45).

D. SERVICE ESTABLISHMENT means a concern (*or person*) which owns, operates, or maintains any type of business which is principally engaged in the furnishing of nonpersonal services, such as (*but not limited to*) repairing, cleaning, redecorating, or rental of personal property, including the furnishing of necessary repair parts or other supplies as part of the services performed.

U. S. GOVERNMENT PRINTING OFFICE 1963 O—696-366

APPENDIX 2

FRANKFORD ARSENAL REPORT R-1838

DOD - ARMY/AIR FORCE/NAVY - NASA
COMMITTEE FOR MACHINE CODABLE SUBJECT MATTER
EXPANDED COSATI CATEGORY LIST
SCIENTIFIC AND TECHNOLOGICAL LANGUAGE

Presented to the ASPR Committee

by ASPR Subcommittee, Case 66-151, on

30 January 1967

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

NAME AND ADDRESS OF APPLICANT

CODE NO.				CATEGORY							SCOPE
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6		
1											AERONAUTICS
1	1										AERODYNAMICS
1	1	1									AERO-ACOUSTICS
1	1	2									AERODYNAMIC DECELERATION
1	1	3									AEROELASTICITY
1	1	4									DECELERATION TECHNOLOGY
1	1	5									DESIGN AND TEST
1	1	6									EXPERIMENTAL AERODYNAMICS
1	1	7									EXTERNAL STORE SEPARATION
1	1	8									FLUTTER
1	1	9									HYDRODYNAMICS
1	1	10									HYPERSONIC AERODYNAMICS
1	1	11									INTERNAL AERODYNAMICS
1	1	12									LOADS AND HINGE MOMENTS
1	1	13									PERFORMANCE
1	1	14									RE-ENTRY AERODYNAMICS
1	1	15									SIMULATION
1	1	16									SPECIAL AERODYNAMIC PROBLEMS
1	1	16	1								AERODYNAMIC DRAG, PROFILE DRAG
1	1	16	2								BOUNDARY LAYER CONTROL, ACTIVE-PASSIVE
1	1	16	3								BUFFETING
1	1	16	4								CONTROL SURFACES
1	1	16	5								DEFLATED SLIPSTREAM
1	1	16	6								FRICTIONAL HEATING
1	1	16	7								LAMINAR FLOW- TURBULENT FLOW
1	1	16	8								SHOCK WAVES
1	1	16	9								STABILITY AUGMENTATION SYSTEMS
1	1	17									STABILITY AND CONTROL
1	1	18									SUBSONIC AERODYNAMICS
1	1	19									SUPERSONIC AERODYNAMICS
1	1	20									THEORETICAL AERODYNAMICS
1	1	21									TRANSONIC AERODYNAMICS
1	1	22									TRANSPIRATION COOLING
1	1	23									TRANSPORTATION COOLING

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	
										SCOPE
1	1	24								WIND TUNNELS
1	2									AERONAUTICS
1	2	1								AIRDROP AND AIRDROP CONTROL SYSTEMS
1	2	1	1							AIRDROP SYSTEM TECHNIQUES
1	2	1	2							AIRDROP SYSTEMS (AERODYNAMICS)
1	2	1	3							COMPONENTS (AIRDROP SYSTEMS)
1	2	2								CARGO RESTRAINT
1	2	3								ENVIRONMENTAL SIMULATION
1	2	4								FLIGHT OPERATING PROBLEMS
1	2	4	1							AIRCRAFT NOISE AND VIBRATION-SHIELDING AND ATTENUATION
1	2	4	2							EFFECTS OF DOWNWASH
1	2	4	3							ENVIRONMENTAL PROTECTION FOR CREW AND EQUIPMENT
1	2	4	4							ENVIRONMENTAL SIMULATOR STUDIES
1	2	4	5							EXTERNAL CARGO-WEIGH-BALANCE, G LOAD
1	2	4	6							ICE FORMATION-DETECTION AND REMOVAL
1	2	4	7							RANGE EXTENSION
1	2	4	8							RECOVERY AND EVACUATION SYSTEMS
1	2	4	9							SHORT TAKE-OFF AND LANDING
1	2	4	10							STATIC ELECTRICITY
1	2	4	11							TRANSITION FLIGHT
1	2	4	12							VERTICAL TAKE-OFF AND LANDING
1	2	5								FLIGHT SAFETY
1	2	5	1							CRASH FIRE
1	2	5	2							CRASH LANDING
1	2	5	3							OPERATIONAL PRACTICES AND PROCEDURES
1	2	5	4							TURBULENCE AND GUSTS
1	2	5	5							VISIBILITY FACTORS
1	2	6								FLIGHT TEST
1	2	7								GROUND OPERATIONS AND TRAFFIC CONTROL
1	2	8								IMPACT SHOCK (AIRCRAFT)
1	2	9								PARACHUTE THEORY
1	2	9	1							CARGO PARACHUTES
1	2	9	2							PERSONNEL PARACHUTES
1	3									AIRCRAFT
1	3	1								AIRCRAFT STRUCTURES
1	3	1	1							FUSELAGES
1	3	1	2							LANDING GEAR
1	3	1	3							SPECIAL PROBLEMS (AIRCRAFT)
1	3	1	4							WING AND EMPENNAGE
1	3	2								AIRFRAME BEARINGS
1	3	3								AIRFRAME DESIGN
1	3	3	1							FATIGUE
1	3	3	2							STRUCTURAL DESIGN
1	3	3	3							VIBRATION AND FLUTTER
1	3	4								CARGO RESTRAINT SYSTEMS

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
1	3	5								CONFIGURATION DESIGN
1	3	6								CONTROL SYSTEM DESIGN
1	3	7								CREW ESCAPE DESIGN
1	3	8								CRYOGENICS
1	3	9								DAMAGE ASSESSMENT
1	3	10								DESIGN-PRODUCTION CYCLE
1	3	10	1							AIR DELIVERY VEHICLES
1	3	10	2							AIRPLANES
1	3	10	3							COMPOUND HELICOPTERS
1	3	10	4							HELICOPTERS
1	3	11								ELECTRO-MECHANICAL INSTALLATIONS
1	3	12								ENGINE AND FUEL SYSTEM INSTALLATIONS
1	3	13								ENVIRONMENTAL CONTROL
1	3	14								ENVIRONMENTAL PROTECTION
1	3	15								ENVIRONMENTAL TESTS
1	3	16								EXTERNAL STORE STRUCTURAL INTEGRITY
1	3	17								FLIGHT PATHS
1	3	18								FUEL EQUIPMENT AND ACCESSORIES
1	3	18	1							AIRCRAFT FUEL TANKS
1	3	18	2							CARBURETORS- CARBURETOR PARTS
1	3	18	3							FUEL LINES (AIRCRAFT)
1	3	18	4							PUMPS
1	3	18	5							STRAINERS
1	3	18	6							VALVES
1	3	19								HANDLING QUALITIES
1	3	20								LAUNCH AND RECOVERY GEAR DESIGN
1	3	21								LIGHTER-THAN-AIR DESIGN
1	3	22								MAINTENANCE
1	3	23								MISCELLANEOUS
1	3	23	1							AIRCRAFT ESCAPE SYSTEMS
1	3	23	2							BREATHING OXYGEN EQUIPMENT
1	3	23	3							EJECTION SEATS-CAPSULES
1	3	23	4							PARACHUTES
1	3	23	5							PERSONNEL RESTRAINT SYSTEMS
1	3	23	6							SEATS, LITTERS
1	3	23	7							WINCHES AND HOISTS (AIRCRAFT)
1	3	23	8							WINDSHIELD WIPERS (AIRCRAFT)
1	3	24								RACKS AND PYLONS
1	3	25								STRUCTURAL ANALYSIS

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY							NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6		SCOPE
1	3	25	1								AEROELASTIC ANALYSIS
1	3	25	2								DYNAMIC LOADS ANALYSIS
1	3	25	3								FATIGUE ANALYSIS
1	3	25	4								SONIC FATIGUE ANALYSIS
1	3	25	5								STATIC STRUCTURAL ANALYSIS
1	3	26									STRUCTURAL TEST
1	3	27									SYSTEM DESIGN AND ANALYSIS
1	3	28									SYSTEMS GROUND TEST
1	3	29									TEST MODELS
1	3	30									VULNERABILITY STUDIES
1	3	31									WEIGHT CONTROL
1	4										AIRCRAFT FLIGHT INSTRUMENTATION
1	4	1									AIR DATA INSTRUMENTATION
1	4	2									AIRCRAFT AIR MASS INSTRUMENTS
1	4	2	1								ALTIMETERS, BAROMETRIC
1	4	2	2								AIRSPEED
1	4	2	3								VERTICAL SPEED
1	4	3									AIRCRAFT ENGINE INSTRUMENTS
1	4	3	1								FLOW METER
1	4	3	2								TEMPERATURE INSTRUMENT
1	4	3	3								THRUSTMETER
1	4	4									AIRCRAFT GYROSCOPIC INSTRUMENTS
1	4	4	1								DIRECTION
1	4	4	2								FLIGHT REFERENCE SYSTEMS
1	4	4	3								RATE
1	4	4	4								VERTICAL AND ATTITUDE
1	4	5									AUTOMATIC CONTROL
1	4	6									DATA PRESENTATION AND RECORDING
1	4	7									FLIGHT INSTRUMENTS
1	4	7	1								FLIGHT CONTROL INSTRUMENTATION
1	4	7	2								FLIGHT RESEARCH INSTRUMENTS
1	4	7	3								FLIGHT TESTS (INSTRUMENTATION)
1	4	8									LIFE SUPPORT AND INSTRUMENTATION
1	4	9									MISCELLANEOUS AIRCRAFT INSTRUMENT EQUIPMENT
1	4	9	1								ACCELEROMETER, INDICATING
1	4	9	2								AUTOPILOTS
1	4	9	3								CLOCKS
1	4	9	4								FLIGHT CONTROL DISPLAYS
1	4	9	5								PRESSURE MEASUREMENT
1	4	9	6								STABILITY AUGMENTORS
1	4	10									SAFETY AND COMFORT FACTORS
1	4	11									SYSTEM PERFORMANCE INSTRUMENTATION

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
1	5									AIR FACILITIES
1	5	1								AIRCRAFT GROUND SUPPORT
1	5	1	1							AUTOMATIC INSPECTION SYSTEMS
1	5	1	2							MAINTENANCE PROCEDURES, TECHNIQUES, METHODS
1	5	1	3							MAINTENANCE TOOLS AND EQUIPMENT
1	5	1	4							SERVICING EQUIPMENT AND SYSTEMS
1	5	1	5							TEST AND CHECK-OUT EQUIPMENT
1	5	2								AIRPORTS
1	5	2	1							AIRCRAFT HANDLING EQUIPMENT
1	5	2	2							AIRCRAFT MAINTENANCE EQUIPMENT
1	5	2	3							CONTROL TOWERS
1	5	2	4							FLIGHT DISPLAYS, COMPUTERS
1	5	2	5							HANGERS
1	5	2	6							LANDING FIELDS
1	5	5								FLIGHT DISPLAYS, DEVICES
1	5	6								FLIGHT TEST SUPPORT

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
2										AGRICULTURE
2	1									AGRICULTURAL CHEMISTRY
2	2									AGRICULTURAL ECONOMICS
2	3									AGRICULTURAL ENGINEERING
2	4									AGRONOMY AND HORTICULTURE
2	5									ANIMAL HUSBANDRY
2	6									FORESTRY

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
3										ASTRONOMY AND ASTROPHYSICS
3	1									ASTRONOMY
3	1	1								AEROGRAPHY
3	1	2								ASTRONOMICAL CONSTANTS AND DISTANCE-SCALES
3	1	3								ASTRONOMICAL OBSERVATORIES
3	1	4								CELESTIAL NAVIGATION
3	1	5			•					COMETS, METEOROIDS, METEORS AND DUST
3	1	6								MOON, PLANETS, AND ASTEROIDS
3	1	7								RADAR ASTRONOMY
3	1	8								SELENOGRAPHY
3	1	9								SOLAR PHENOMENA
3	2									ASTROPHYSICS
3	2	1								COMPOSITION OF STARS AND INTERSTELLAR MATTER
3	2	2								COSMOLOGY
3	2	3								ELECTROMAGNETIC AND CORPUSCULAR RADIATIONS
3	2	4								EVOLUTION OF STARS AND GALAXIES
3	2	5								GRAVITATIONAL, MAGNETIC AND ELECTRIC FIELDS
3	2	6								GUIDANCE TRACKING
3	2	8								LUNAR AND PLANETARY ATMOSPHERE
3	2	9								LUNAR AND PLANETARY SCIENCES
3	2	9	1							CARTOGRAPHY
3	2	9	2							GEODESY
3	2	9	3							GEOGRAPHY
3	2	9	4							GEOLOGY AND MINERALOGY
3	2	9	5							SOIL MECHANICS
3	2	9	6							TERRESTIAL MAGNETISM
3	2	10								METEOROIDS
3	2	10	1							ENVIRONMENT
3	2	10	2							IMPACT
3	2	11								PARTICLES AND FIELDS
3	2	11	1							AURORA
3	2	11	2							MAGNETIC FIELDS
3	2	11	3							RADIATION BELT
3	2	11	4							SOLAR TERRESTIAL INTERACTIONS
3	2	11	5							VAN ALLEN BELTS
3	2	12								INTERSTELLAR SPACE

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

NAME AND ADDRESS OF APPLICANT

CODE NO: FIELD	GROUP	SECTION	UNIT	CATEGORY: RESEARCH	LABORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE
2										AGRICULTURE
2	1									AGRICULTURAL CHEMISTRY
2	2									AGRICULTURAL ECONOMICS
2	3									AGRICULTURAL ENGINEERING
2	4									AGRONOMY AND HORTICULTURE
2	5									ANIMAL HUSBANDRY
2	6									FORESTRY

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
4										ATMOSPHERIC SCIENCES
4	1									ATMOSPHERIC PHYSICS
4	1	1								AERONOMY
4	1	2								AEROLOGY
4	1	3								AEROSOL AND CLOUD PHYSICS
4	1	4								ATMOSPHERIC ELECTRICITY
4	1	5								ATMOSPHERIC OPTICS
4	1	6								ATMOSPHERIC STRUCTURE AND COMPOSITION
4	1	6	1							IONOSPHERE
4	1	6	2							STRATOSPHERE
4	1	6	3							TROPOPAUSE
4	1	6	4							TROPOSPHERE
4	1	6	5							UPPER ATMOSPHERE
4	1	7								AURORA AND AIRGLOW
4	1	7	1							NIGHT SKY
4	1	7	2							SKY BRIGHTNESS
4	1	7	3							TWILIGHT
4	1	7	4							ZODIACAL LIGHT
4	1	8								CHEMICAL PROPERTIES (ATMOSPHERIC)
4	1	8	1							ATMOSPHERE
4	1	8	2							ATMOSPHERE MODELS
4	1	9								COSMIC RAYS
4	1	10								ENERGETIC PARTICLES (ATMOSPHERIC)
4	1	10	1							ATMOSPHERIC ELECTRICITY
4	1	10	2							IONOSPHERIC DISTURBANCES
4	1	10	3							LIGHTNING
4	1	11								IONIC AND NEUTRAL PARTICLE INTERACTIONS
4	1	12								IONOSPHERIC PHYSICS
4	1	13								MODEL ATMOSPHERES
4	1	14								MOON AND PLANETARY ATMOSPHERES
4	1	15								PHYSICAL PROPERTIES (ATMOSPHERIC)
4	1	15	1							ATMOSPHERE ENTRY
4	1	15	2							ATMOSPHERIC CONDENSATION
4	1	15	3							ATMOSPHERIC MOTION
4	1	15	4							ATMOSPHERIC PRECIPITATION
4	1	15	5							ATMOSPHERIC TIDES
4	1	15	6							ATMOSPHERICS
4	1	15	7							CLOUDS
4	1	15	8							DAWN CHORUS
4	1	15	9							JET STREAMS (METEOROLOGY)
4	1	15	10							NOCTILUCENT CLOUDS
4	1	16								SOLAR RADIATION

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

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4	1	17								SOLAR - TERRESTIAL PHYSICS
4	2									METEOROLOGY
4	2	1								AERONAUTICAL METEOROLOGY
4	2	2								ARCTIC METEOROLOGY
4	2	2	1							ATMOSPHERIC TEMPERATURE
4	2	2	2							BAROMETRIC PRESSURE
4	2	2	3							CEILING
4	2	2	4							DEW
4	2	2	5							DEW POINT
4	2	2	6							GUSTS
4	2	2	7							HAZE
4	2	2	8							HURRICANE TRACKING
4	2	2	9							MARINE METEOROLOGY
4	2	2	10							METEOROLOGICAL PHENOMENA
4	2	2	11							MICROBAROMETRIC WAVES
4	2	2	12							STRATUS CLOUDS
4	2	2	13							WIND (METEOROLOGY)
4	2	3								AUTOMATIC WEATHER STATIONS
4	2	3	1							AUTOMATIC LANDBASED (RADIO TRANSMITTER)
4	2	3	2							AUTOMATIC SEABASED (RADIO TRANSMITTER)
4	2	3	3							PORTABLE
4	2	4								CLIMATOLOGY
4	2	5								DYNAMIC METEOROLOGY
4	2	6								HEAT TRANSFER, AIR AND SOIL TEMPERATURES
4	2	7								METEOROLOGICAL BALLOONS
4	2	8								METEOROLOGICAL ROCKETS
4	2	9								METEOROLOGICAL SATELLITES
4	2	10								METEOROLOGICAL SENSORS
4	2	11								NUMERICAL WEATHER FORECASTING
4	2	12								PHYSICAL METEOROLOGY
4	2	13								RADIOSONDES (RECEPTORS AND RECORDERS)
4	2	14								RAWIN SETS
4	2	15								STORMS, HURRICANES, TORNADOES, ETC.
4	2	16								SYNOPTIC METEOROLOGY
4	2	17								TROPICAL METEOROLOGY
4	2	18								WATER VAPOR
4	2	19								WEATHER FORECASTING
4	2	19	1							HAIL
4	2	19	2							HURRICANES
4	2	19	3							ICE FOG

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
4	2	18	4							RAIN FALL
4	2	19	5							SNOW
4	2	19	6							THUNDERSTORM
4	2	19	7							TROPICAL CYCLONES
4	2	20								WEATHER MODIFICATION
4	2	20	1							ANTICYCLONES
4	2	20	2							ARTIFICIAL PRECIPITATION
4	2	20	3							RAIN DROPS
4	2	21								WEATHER PATTERNS AND FORECASTING
4	2	22								WEATHER STATIONS
4	2	22	1							ANEMOMETERS
4	2	22	2							BAROMETERS
4	2	22	3							HYGROMETERS
4	2	22	4							HYPSOMETER
4	2	22	5							LAPSE RATE
4	2	22	6							METEOROLOGICAL BALLOONS
4	2	22	7							METEOROLOGICAL BATTERIES
4	2	22	8							METEOROLOGICAL CHARTS
4	2	22	9							METEOROLOGICAL INSTRUMENTS
4	2	22	10							METEOROLOGICAL PARAMETERS
4	2	22	11							PSYCHROMETERS
4	2	22	12							RADIOSONDES
4	2	22	13							VERTICAL GUST RECORDERS
4	2	24								WIND SYSTEMS

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
5										BEHAVIORAL AND SOCIAL SCIENCES
5	1									ADMINISTRATION AND MANAGEMENT
5	1	1								ACCOUNTING
5	1	2								BUDGETING
5	1	3								CLERICAL STAFF
5	1	4								DATA MANAGEMENT
5	1	5								DEPARTMENT MANAGEMENT
5	1	6								OPERATIONS (MANAGEMENT)
5	1	7								ORGANIZATION COORDINATION
5	1	8								PRODUCTION PLANNING
5	1	9								PROGRAM MANAGEMENT
5	1	9	1							CONFIGURATION MANAGEMENT
5	1	9	2							OPERATIONS ANALYSIS
5	1	10								PUBLIC RELATIONS
5	1	11								TECHNICAL STAFF
5	2									DOCUMENTATION AND INFORMATION TECHNOLOGY
5	2	1								ACQUISITION, DISTRIBUTION, DISSEMINATION OF RECORDED INFORMATION
5	2	2								CATALOGING, INDEXING, ABSTRACTING
5	2	3								INFORMATION STORAGE AND RETRIEVAL
5	2	4								LIBRARY SCIENCE
5	2	5								TECHNICAL ILLUSTRATION
5	2	6								TECHNICAL WRITING AND EDITING
5	2	7								TERMINOLOGY, DICTIONARIES, THESAURI
5	3									ECONOMICS
5	3	1								BANKING AND FINANCE
5	3	2								ECONOMETRICS
5	3	3								ECONOMIC HISTORY
5	3	4								ECONOMIC THEORY
5	3	5								INTERNATIONAL RELATIONS, ECONOMICS
5	4									HISTORY, LAW AND POLITICAL SCIENCE
5	4	1								INTERNATIONAL RELATIONS, POLITICS
5	4	2								THEORY AND PRACTICE OF GOVERNMENT

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

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FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
5	5									HUMAN FACTORS ENGINEERING
5	5	1								ANTHROPOMETRY
5	5	2								DESIGN OF TOOLS, INSTRUMENTS, EQUIPMENT, AND MACHINERY
5	5	3								EQUIPMENT DESIGN FOR OPTIMUM UTILIZATION
5	5	4								WORK AND LIVING SPACE DESIGN
5	5	4	1							COCKPIT AND CREW-TROOP AREA GEOMETRY
5	5	4	2							COCKPIT CONTROL ACTUATORS
5	5	4	3							COMMUNICATION DEVICES
5	5	4	4							ENTRY AND EGRESS FACILITIES
5	5	4	5							FATIGUE ANALYSES
5	5	4	6							INDICATOR POSITIONING
5	5	4	7							PILOT RESPONSE EVALUATION
5	5	4	8							PSYCHOLOGICAL EFFECTS
5	5	4	9							SAFETY HAZARDS
5	5	4	10							WARNING DEVICES
5	6									HUMANITIES
5	6	1								ART
5	6	2								DRAMA
5	6	3								MUSIC
5	6	4								PHILOSOPHY
5	6	5								RELIGION
5	7									LINGUISTICS
5	7	1								MACHINE TRANSLATION
5	7	2								MATHEMATICAL LINGUISTICS
5	7	3								STUDY OF LANGUAGES
5	8									MAN-MACHINE RELATIONS
5	8	1								FLIGHT STRESS FACTORS
5	8	2								HUMAN PERFORMANCE STUDIES
5	8	3								HUMAN PILOT DYNAMIC
5	8	4								INFORMATION DISPLAYS DESIGN
5	8	5								MANUAL CONTROLS DESIGN
5	9									PERSONNEL SELECTION, TRAINING, AND EVALUATION
5	9	1								EDUCATIONAL VOCATIONAL TRAINING
5	9	2								INDUSTRIAL RELATIONS
5	9	3								MILITARY TRAINING INDOCTRINATION

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO. FIELD	GROUP	SECTION	UNIT	CATEGORY 1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
[illegible]	[illegible]	4								TRAINING DEVICES SURFACE LAUNCHED MISSILES
[illegible]	[illegible]	4	1							COMMAND AND CONTROL
[illegible]	[illegible]	[illegible]	2							COMPLETE ROCKET SYSTEM
[illegible]	[illegible]	4	3							OPERATOR
[illegible]	[illegible]	4	4							MAINTENANCE
[illegible]	[illegible]	4	5							TRAINING FILMS
5	[illegible]	5								WAGES, SALARIES AND BENEFITS
5	10									PSYCHOLOGY (INDIVIDUAL AND GROUP BEHAVIOR)
5	10	1								EDUCATIONAL PSYCHOLOGY
5	10	2								EXPERIMENTAL PSYCHOLOGY
5	10	3								CLINICAL PSYCHOLOGY
5	10	4								DEVELOPMENTAL PSYCHOLOGY
5	10	5								MILITARY PSYCHOLOGY
5	10	6								PARAPSYCHOLOGY
5	10	7								PHYSIOLOGICAL PSYCHOLOGY
5	10	8								SOCIAL PSYCHOLOGY
5	11									SOCIOLOGY
5	11	1								ANTHROPOLOGY
5	11	2								CRIMINOLOGY
5	11	3								ETHNOLOGY

NAME AND ADDRESS OF APPLICANT

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
6										BIOLOGICAL AND MEDICAL SCIENCE
6	1									BIOCHEMISTRY
6	1	1								BIOCHEMICAL ANALYSIS
6	1	2								IDENTIFICATION, CHARACTERIZATION AND MEASUREMENT BIOCHEMICAL
6	1	3								PHOTO AND CHEMOSYNTHESIS
6	1	4								REACTIONS AND PROPERTIES OF CHEMICAL SUBSTANCES
6	1	5								STUDIES OF CHEMICAL PROCESSES - BIOLOGICAL SYSTEMS
6	1	6								SUBSTANCES (BIOCHEMICAL)
6	2									BIOENGINEERING
6	2	1								BIODYNAMICS
6	2	2								BIOINSTRUMENTATION AND EQUIPMENT
6	2	2	1							BIOINSTRUMENTATION (MAN MACHINE SYSTEMS)
6	2	2	2							DATA MONITORING
6	2	2	3							DATA SELECTION
6	2	2	4							TELEMETRY
6	2	3								BIOMEDICAL DATA PROCESSING
6	2	3	1							BIOMEDICAL INFORMATION HANDLING
6	2	3	2							MATHETICAL MODELS
6	2	3	3							PARAMETER ESTIMATION
6	2	3	4							STATISTICAL METHODS
6	2	3	5							STORAGE AND RETRIEVAL
6	3									BIOLOGY
6	3	1								ANIMAL ANATOMY
6	3	2								ANIMAL BREEDING
6	3	3								BIOLOGICAL CONTROL SYSTEMS
6	3	4								GENERAL STUDIES (BOTANY, ENTOMOLOGY, ZOOLOGY)
6	4									BIONICS
6	5									CLINICAL MEDICINE
6	5	1								DENTISTRY
6	5	2								GENERAL MEDICINE
6	5	3								INTERNAL MEDICINE
6	5	4								PATHOLOGY
6	5	5								PHYSICAL THERAPY
6	6									ENVIRONMENTAL BIOLOGY

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY							NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT		SCOPE
6	6	1									ECOLOGY
6	6	2									EXTERNAL INFLUENCES
6	6	3									LITERATURE
6	6	4									PEST CONTROLS
6	6	5									PESTICIDES
6	7										ESCAPE, RESCUE AND SURVIVAL
6	7	1									CATAPULTS, PERSONNEL EJECTION
6	7	2									DECONTAMINATION
6	7	3									ESCAPE SYSTEMS
6	7	4									FLIGHT CLOTHING
6	7	5									METHODS AND EQUIPMENT (ESCAPE)
6	7	5	1								PARACHUTES
6	7	5	2								ROTORCHUTES
6	7	6									OXYGEN EQUIPMENT
6	7	7									RESCUE EQUIPMENT
6	7	8									SURVIVAL DOCTRINE AND METHODS
6	7	9									SURVIVAL EQUIPMENT
6	7	10									SURVIVAL GEAR
6	8										FOOD
6	8	1									FOOD CHEMISTRY
6	8	1	1								ENZYMES
6	8	1	2								FLAVOR AND ODOR IDENTIFICATION
6	8	1	3								FLAVOR AND ODOR SYNTHESIS
6	8	1	4								NUTRITION
6	8	2									FOOD ENGINEERING
6	8	3									FOOD MICROBIOLOGY
6	8	4									FOOD PACKAGING
6	8	4	1								ASEPTIC
6	8	4	2								FLEXIBLE FOOD PACKAGING
6	8	4	3								FOOD PROCESSED IN PACKAGE
6	8	4	4								RIGID PACKAGING (FOOD)
6	8	4	5								VACUUM FOOD PACKAGING
6	8	4	6								ZERO GRAVITY PACKAGES (SPACE)
6	8	5									FOOD PROCESSING
6	8	5	1								DEHYDRATION
6	8	5	2								FABRICATION
6	8	5	3								FORMULATION AND COMPOSITION
6	8	5	4								HEAT
6	8	5	5								IRRADIATION

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
6	8	5	6							OTHER PRESERVATION AND PROCESSING METHODS
6	8	5	7							PRODUCTION AND MANUFACTURE (FOOD PRODUCTS)
6	8	5	8							SYNTHESIS (FOOD PRESERVATION)
6	8	5	9							UNIT PROCESSES (FOOD)
6	8	6								FOOD PSYCHOLOGY
6	8	6	1							ACCEPTANCE
6	8	6	2							NON-STRESS FACTORS
6	8	6	3							STRESS FACTORS
6	8	6	4							TEST METHODOLOGY
6	8	7								FOOD TECHNOLOGY
6	8	8								KITCHEN EQUIPMENT
6	8	8	1							FIELD PREPARATION SYSTEMS
6	8	8	2							FIXED PREPARATION SYSTEMS
6	8	9								NUTRITIONAL DESIGN
6	8	10								PRODUCT DESIGN (FOOD PRODUCTS
6	8	11								RATION DESIGN
6	9									HYGIENE AND SANITATION
6	9	1								AIR AND WATER POLLUTION
6	9	2								PREPARED AND PACKAGED PRODUCTS
6	9	3								SYNTHETIC COMPOUNDS
6	10									INDUSTRIAL (OCCUPATIONAL) MEDICINE
6	10	1								MAN VS EQUIPMENT
6	10	2								NOISE (INDUSTRIAL MEDICINE)
6	10	3								PHYSICAL TRAUMA (WOUND BALLISTICS)
6	10	4								SAFETY AND PREVENTIVE MEDICINE
6	10	5								TOXIC EXPOSURE
6	11									LIFE SUPPORT
6	11	1								CABIN CONDITIONING
6	11	2								CLOSED ECOLOGICAL SYSTEMS
6	11	3								ECOLOGICAL FACTORS
6	11	4								RADIATION PROTECTION
6	11	5								RESPIRATORY SUPPORT
6	11	6								SPACE SUITS
6	11	7								SUSTAINMENT IN FOREIGN ENVIRONMENTS

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL SYSTEMS DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
6	11	8								TEMPERATURE (WEATHER)
6	12									MEDICAL AND HOSPITAL EQUIPMENT AND SUPPLIES
6	12	1								ATMOSPHERE CONDITIONING
6	12	2								LABORATORY SUPPORT
6	12	3								THERMAL CONTROL
6	13									MICROBIOLOGY
6	13	1								CHEMICAL - BIOLOGICAL - RADIOLOGICAL WARFARE
6	13	2								STUDIES OF BACTERIA
6	14									PERSONNEL SELECTION AND MAINTENANCE (MEDICAL)
6	14	1								INFECTIOUS DISEASES
6	14	2								INDUSTRIAL MEDICINE
6	14	3								MENTAL HEALTH
6	14	4								PHYSICAL EXAMINATIONS
6	14	5								PHYSICAL FITNESS
6	14	6								PHYSICAL STANDARDS
6	14	7								QUARANTINE PROCEDURES
6	15									PHARMACOLOGY
6	15	1								DRUGS (COMPOSITION)
6	15	2								PLANETARY SURFACE SAMPLING
6	15	3								PSYCHOPHARMACOLOGY (EFFECT OF)
6	16									PHYSIOLOGY
6	16	1								GROWTH
6	16	2								SENSORY PHYSIOLOGY
6	16	3								STERILIZATION
6	17									PROTECTIVE EQUIPMENT
6	17	1								GAS SHIELDING AND PROTECTION
6	17	2								CLOTHING DESIGN
6	17	3								CLOTHING CONSTRUCTION
6	17	4								COMBAT PROTECTIVE CLOTHING
6	17	4	1							ANTIPERSONEL MINE PROTECTIVE CLOTHING
6	17	4	2							BIOLOGICAL WARFARE PROTECTIVE CLOTHING
6	17	4	3							BODY ARMOR

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO: FIELD | GROUP | SECTION | UNIT

CATEGORY: 1 RESEARCH; 2 EXPLORATORY DEVELOPMENT; 3 ADVANCED DEVELOPMENT; 4 ENGINEERING DEVELOPMENT; 5 OPERATIONAL DEVELOPMENT; 6 MANAGEMENT AND SUPPORT

NAME AND ADDRESS OF APPLICANT

FIELD	GROUP	SECTION	UNIT	SCOPE
6	17	4	4	CHEMICAL WARFARE PROTECTIVE CLOTHING
6	17	4	5	NUCLEAR WARFARE PROTECTIVE CLOTHING
6	17	4	6	SPACE CLOTHING
6	17	4	7	SUBMARINERS CLOTHING
6	17	5		ENVIRONMENTAL PROTECTIVE CLOTHING
6	17	6		OCCUPATIONAL PROTECTIVE CLOTHING
6	17	7		PERSONAL EQUIPMENT
6	17	8		TENTS AND SHELTERS
6	17	8	1	AIR-SUPPORTED SHELTERS
6	17	8	2	FRAME TYPES
6	17	8	3	HARDWARE AND BINDINGS FOR TENTS
6	17	8	4	POLE SUPPORTED
6	17	8	5	SPECIAL TYPE SHELTERS
6	18			RADIOBIOLOGY
6	18	1		ELECTROMAGNETIC RADIATION DETECTION
6	18	2		HEALTH PHYSICS
6	18	3		PROPHYLAXIS AND THERAPY
6	18	4		RADIATION EFFECTS (BIOLOGICAL)
6	18	5		RADIATION INJURIES
6	18	6		RADIATION PROTECTIVE COMPOUNDS
6	19			STRESS PHYSIOLOGY
6	19	1		AEROSPACE MEDICINE
6	19	2		ALTITUDE SICKNESS
6	19	3		COLD INJURIES
6	19	4		ENVIRONMENTAL EFFECTS
6	19	5		HEAT CASUALTIES
6	19	6		MOTION, SOUND, LIGHT AND HEAT STRESSES
6	19	7		STRESS NUTRITION (SEE ALSO FOOD 060B0000)
6	20			TOXICOLOGY
6	20	1		INDUSTRIAL
6	20	2		PHYSIOLOGICAL EFFECTS
6	20	3		POISONS AND CONTAMINANTS
6	20	3	1	M_M AND C_W DECONTAMINATION
6	20	3	2	POISON DETECTION
6	20	3	3	NEUTRALIZATION

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
6	21									WEAPONS EFFECTS
6	21	1								WOUNDS (RELATED INJURIES)
6	21	1	1							BOMB TYPE WOUNDS
6	21	1	2							SMALL ARMS TYPE WOUNDS
6	22									BIOPHYSICS
6	22	1								ABSORPTION AND TRANSFER OF ENERGY IN THE CELL
6	22	2								FLASH BLINDNESS
6	22	3								MATHEMATICAL MODELS OF BIOPHYSICAL SYSTEMS
6	22	4								OTHER MODELS
6	22	5								RADIATION EFFECTS ON CELL

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
7										CHEMISTRY
7	1									CHEMICAL ENGINEERING
7	1	1								TECHNOLOGY (CHEMICAL ENGINEERING)
7	1	2								MATERIALS HANDLING
7	1	3								MATERIALS SEPARATION
7	1	4								PILOT PLANT DESIGN AND OPERATION
7	2									INORGANIC CHEMISTRY
7	2	1								ANALYSIS, PREPARATION AND REACTION
7	2	1	1							HALOGENS
7	2	1	2							HEAVY METALS
7	2	1	3							LIGHT METALS
7	2	1	4							NOBLE GASES
7	2	1	5							OTHER NON-METALS
7	2	1	6							RARE EARTH ELEMENTS
7	2	2								BORON INORGANIC COMPOUNDS
7	2	3								INERT GAS COMPOUNDS
7	2	4								SUPERCONDUCTING COMPOUNDS
7	2	5								CRYSTAL PURIFICATION TECHNIQUES
7	3									ORGANIC CHEMISTRY
7	3	1								POLYMER CHEMISTRY
7	3	2								SURFACE CHEMISTRY
7	4									PHYSICAL CHEMISTRY
7	4	1								AEROSOLS
7	4	2								ATMOSPHERIC OZONE
7	4	3								COMBUSTION
7	4	4								ELECTROCHEMISTRY
7	4	5								MASS SPECTROSCOPY
7	4	6								METAL-ORGANIC COMPOUNDS
7	4	7								MOLECULAR SPECTROSCOPY
7	4	8								PHOTOCHEMISTRY
7	4	9								RADIATION
7	4	10								SILICONES
7	4	11								THERMODYNAMICS

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
7	5									RADIO AND RADIATION CHEMISTRY
7	6									ANALYTICAL CHEMISTRY

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
8										EARTH SCIENCES AND OCEANOGRAPHY
8	1									BIOLOGICAL OCEANOGRAPHY
8	2									CARTOGRAPHY
8	3									DYNAMIC OCEANOGRAPHY
8	3	1								MARINE TECHNOLOGY
8	3	2								OCEANOGRAPHIC BUOYS
8	3	3								OCEANOGRAPHIC INSTRUMENTS
8	4									GEOCHEMISTRY
8	5									GEODESY
8	6									GEOGRAPHY
8	6	1								BIOGEOGRAPHY
8	6	2								CULTURAL GEOGRAPHY
8	6	3								ECONOMIC GEOGRAPHY
8	6	4								GEOMORPHOLOGY
8	6	5								MEDICAL GEOGRAPHY
8	6	6								MILITARY GEOGRAPHY
8	6	7								POLITICAL GEOGRAPHY
8	6	8								REGIONAL CLIMATOLOGY
8	6	9								REGIONAL GEOGRAPHY
8	7									GEOLOGY AND MINERALOGY
8	7	1								CRYSTALLOGRAPHY (GEOLOGY AND MINEROLOGY)
8	7	2								GEOLOGY
8	7	3								GEOMORPHOLOGY
8	7	4								HISTORICAL GEOLOGY
8	7	5								MINERALOGY
8	7	6								PALEONTOLOGY
8	7	7								PETROLOGY
8	7	8								ROCK MECHANICS
8	7	8	1							DYNAMIC PROPERTIES
8	7	8	2							STATIC PROPERTIES
8	7	8	3							MASS PROPERTIES

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
8	7	9								STRATIGRAPHY
8	7	10								STRUCTURAL GEOLOGY
8	7	11								VULCANOLOGY
8	8									HYDROLOGY AND LIMNOLOGY
8	9									MINING ENGINEERING
8	10									PHYSICAL OCEANOGRAPHY
8	11									SEISMOLOGY
8	12									SNOW, ICE AND PERMAFROST
8	12	1								GLACIOLOGY
8	13									SOIL MECHANICS
8	13	1								CONSOLIDATION
8	13	2								DYNAMIC PROPERTIES
8	13	3								STATIC PROPERTIES
8	13	4								STABILIZATION
8	14									TERRESTRIAL MAGNETISM
8	14	1								GEOMAGNETIC AND INTERPLANETARY MAGNETIC INTERACTIONS
8	14	2								GEOMAGNETIC FIELD VARIATION
8	14	3								MAIN GEOMAGNETIC FIELD

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
9										ELECTRONICS AND ELECTRICAL ENGINEERING
9	1									COMPONENTS
9	1	1								AIRCRAFT GENERATORS
9	1	1	1							AMPLIFIERS
9	1	1	2							BUSS BARS
9	1	1	3							GENERATORS
9	1	1	4							INVERTERS
9	1	1	5							VOLTAGE REGULATORS
9	1	2								CABLE
9	1	3								CAPACITORS
9	1	4								CONDENSERS
9	1	5								CONNECTORS
9	1	6								CRYSTALS
9	1	7								DATA PROCESSING
9	1	8								DETECTORS
9	1	8	1							MICROWAVE
9	1	8	2							INFRARED
9	1	8	3							VISIBLE
9	1	9								DIODES
9	1	10								ELECTRO MECHANICAL COMPONENTS
9	1	11								ELECTRIC SWITCHES
9	1	12								ELECTRON TUBES
9	1	13								ELECTRONIC CIRCUIT ELEMENTS
9	1	13	1							COILS
9	1	13	2							CONVENTIONAL
9	1	13	3							DISCRETE
9	1	13	4							INTEGRATED CIRCUITS
9	1	13	5							MICRO WAVE
9	1	13	6							MICROELECTRONICS, THIN FILM
9	1	13	7							MONOLITHIC
9	1	13	8							RELAYS
9	1	13	9							RESISTORS
9	1	13	10							SEMI-CONDUCTORS
9	1	13	11							THIN FILM
9	1	13	12							TRANSISTORS
9	1	14								ELECTRONIC DISPLAY
9	1	15								FLUIDIC CIRCUIT ELEMENTS
9	1	16								INTEGRATED CIRCUIT ELEMENTS
9	1	17								MAGNETIC CIRCUIT ELEMENTS
9	1	18								MAGNETIC CORES

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL SYSTEMS DEVELOPMENT	6 MANAGEMENT AND SUPPORT	
										SCOPE
9	1	19								METERS
9	1	20								MICRO-ELECTRONICS
9	1	21								MICROWAVE CIRCUIT ELEMENTS
9	1	22								PERFORMANCE STANDARDS
9	1	23								POTTED CIRCUITS
9	1	24								POWER EQUIPMENT PARTS
9	1	25								PRINTED CIRCUITS
9	1	26								QUALIFICATION TESTING
9	1	27								RECORD/AMPLIFY COMPONENTS
9	1	28								RELAYS
9	1	29								RESISTORS
9	1	30								SEMICONDUCTOR DEVICES
9	1	31								SPEAKERS
9	1	32								SWITCHES
9	1	33								THERMISTORS
9	1	34								THIN FILMS
9	1	35								TRANSFORMERS
9	1	36								TRANSISTORS
9	1	37								VARISTORS
9	1	38								WIRE
9	2									COMPUTERS
9	2	1								ANALOG COMPUTERS
9	2	2								ANALOG-DIGITAL COMPUTERS
9	2	3								BIONIC COMPUTERS
9	2	4								COMPILERS
9	2	5								COMPUTER ACCESSORIES
9	2	6								COMPUTER APPLICATIONS
9	2	7								COMPUTER DESIGN AND DEVELOPMENT
9	2	8								COMPUTER INSTALLATION
9	2	9								COMPUTER PROGRAMMING
9	2	9	1							BUSINESS TYPE

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
9	2	9	2							EXECUTIVE SYSTEMS
9	2	9	3							ORBIT AND ALTITUDE DETERMINATION
9	2	9	4							REALTIME
9	2	9	5							SCIENTIFIC DATA ANALYSIS
9	2	9	6							SCIENTIFIC DATA REDUCTION
9	2	9	7							SCIENTIFIC PROGRAMMING
9	2	9	8							SOFTWARE SYSTEMS
9	2	9	9							SYSTEMS
9	2	10								COMPUTER SUPPLIES
9	2	11								DATA PROCESSING
9	2	12								DATA STORAGE AND RETRIEVAL
9	2	13								DIGITAL COMPUTERS
9	2	14								EXECUTIVE ROUTINES
9	2	15								FLUIDIC COMPUTERS
9	2	16								GRAPHIC DISPLAYS
9	2	17								HYBRID COMPUTERS
9	2	18								PROGRAMS AND PROGRAMMING
9	2	18	1							PROGRAM GENERATORS
9	2	18	2							PROGRAMMING LANGUAGES
9	2	18	3							REAL TIME PROGRAMS
9	2	19								SOFTWARE SYSTEMS
9	2	20								SYSTEM DOCUMENTATION
9	2	21								SYSTEM EVALUATION
9	2	22								THIN FILM TECHNIQUES
9	2	23								TIME SHARING
9	2	24								TIME SHARING-MULTI PROCESSING
9	3									ELECTRONIC AND ELECTRICAL ENGINEERING
9	3	1								ELECTRICAL DISTRIBUTION SYSTEMS
9	3	1	1							INTERFERENCE SUPPRESSION
9	3	1	2							INTERFERENCE VUNERABILITY REDUCTION
9	3	2								ELECTRO MAGNETS RADIATION
9	3	3	1							ELECTRO MAGNETS
9	3	4								ELECTRICAL AND ELECTRONIC INSTALLATION
9	3	5								ELECTRICAL MACHINERY
9	3	6								ELECTROMAGNETIC COMPATIBILITY
9	3	7								ELECTRONIC SYSTEMS

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
9	2	7	1							ACCELERATION AND IMPACT RECORDING (ELECTRONIC SYSTEMS)
9	2	7	2							ACCELERATION AND IMPACT SENSING (ELECTRONIC SYSTEMS)
9	3	7	3							OSCILLOGRAPHIC SYSTEMS
9	3	7	4							TIMING DEVICES
9	3	8								OPERATION OF ELECTRICIAL MACHINERY
9	3	9								STATIC CONVERTERS, INVESTERS AND TRANSFORMERS
9	3	10								TEST EQUIPMENT
9	4									INFORMATION THEORY
9	4	1								CODING THEORY
9	4	2								COMMUNICATION TECHNIQUES AND COMPONENTS
9	4	3								COMMUNICATIONS THEORY
9	4	3	1							DATA COMPRESSION
9	4	3	2							ERROR DETECTION AND CORRECTION
9	4	4								DATA DISPLAY
9	4	5								DATA UTILIZATION/COMPACTION
9	4	6								DECISION THEORY
9	4	7								GAME THEORY
9	4	8								INFORMATION CONTENT
9	4	9								INFORMATION ENTROPY
9	4	10								INPUT/OUTPUT TECHNIQUES
9	4	11								NOISE (INFORMATION THEORY)
9	4	12								REPRESENTATION
9	4	13								SIGNAL PROCESSING THEORY
9	4	14								STATISTICAL ANALYSIS
9	4	15								UNCERTAINTY
9	5									SUBSYSTEMS
9	5	1								AMPLIFIERS
9	5	2								ELECTRICAL SUBSYSTEMS
9	5	2	1							HEATING EQUIPMENT
9	5	2	2							IGNITION SYSTEMS
9	5	2	3							LIGHTS
9	5	2	4							MOTORS
9	5	2	5							SWITCHES FOR CIRCUIT BREAKERS
9	5	2	6							WIRING, CABLES
9	5	3								ANTENNAS
9	5	3	1							ANTENNAE COUPLERS
9	5	3	2							ANTENNAE DRIVE SYSTEMS

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
9	5	3	3							BROADBAND MICROWAVE
9	5	3	4							BROADBAND VHF-UHF ANTENNAES
9	5	3	5							DIRECTIONAL AND OMNI - DIRECTIONAL VHF
9	5	3	6							DUPLEXERS
9	5	3	7							ELECTRO-MAGNETIC WINDOWS
9	5	3	8							FEED SYSTEMS
9	5	3	9							HF VHF
9	5	3	10							HIGH DEFINITION
9	5	3	11							HIGH SPEED
9	5	3	12							LF MF
9	5	3	13							MASTS
9	5	3	14							MICROWAVE
9	5	3	15							PEDESTALS
9	5	3	16							RADOMES
9	5	3	17							REFLECTOR-STRUCTURES
9	5	3	18							TOWERS
9	5	3	19							TRANSMISSION LINES (RF)
9	5	3	20							UHF SHF
9	5	4								COMMAND AND CONTROL EQUIPMENT
9	5	5								DATA DISPLAY
9	5	6								DATA HANDLING EQUIPMENT
9	5	7								DESIGN AND DEVELOPMENT OF COMPONENT AGGREGATES
9	5	8								ELECTRICAL NETWORKS
9	5	9								ELECTRONIC CIRCUITS
9	5	10								ENCODERS
9	5	11								FLUIDIC CIRCUITS
9	5	12								MICROWAVE
9	5	13								MODELS
9	5	14								PARAMETRIC AMPLIFIERS
9	5	15								POWER SUPPLIES
9	5	16								RADIATION
9	5	17								RECEIVERS
9	5	18								RF RECEIVERS
9	5	19								RF TRANSMITTERS
9	5	20								RF TRANSPONDERS
9	5	21								R-F CIRCUITS
9	5	22								SERVOMECHANISMS
9	5	23								SYNCHROS

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTERE

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
9	5	24								SENSORS
9	5	25								TRANDUCERS
9	5	26								TRANSCEIVERS
9	5	27								TRANSMITTERS
9	5	28								TRANSPONDERS
9	5	29								TAPE RECORDERS (AIRBORNE AND SPACEBORNE)
9	5									TELEMETRY
9	5	1								ANTENNAS (TELEMETRY)
9	6	2								COMMUNICATIONS
9	6	3								COMPONENTS
9	6	4								FM/FM
9	6	5								PACM
9	6	6								PAM
9	6	7								PCM
9	6	8								PFM
9	6	9								RADIO
9	6	10								READOUT AND DISPLAY
9	6	11								TELEMETRY DECOMMUTATION EQUIPMENT
9	6	12								TELEMETRY RECEIVERS
9	6	13								TELEMETRY TRANSMITTERS

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
10										ENERGY CONVERSION (NON-PROPULSIVE)
10	1									CONVERSION TECHNIQUES
10	1	1								ELECTRICAL POWER CONVERSION DEVICES
10	1	2								ENGINES AND MOTORS
10	1	3								MAGNETOHYDRODYNAMIC DEVICES
10	1	4								PHOTOELECTRIC DEVICES
10	1	5								PHOTOVOLTAIC DEVICES
10	1	6								THERMAL CONVERSION
10	1	7								THERMAL PHOTOVOLTAIC DEVICES
10	1	8								THERMIONIC DEVICES
10	1	9								THERMIONIC GENERATORS
10	1	10								THERMOELECTRIC DEVICES
10	1	11								THERMOELECTRIC GENERATORS
10	1	12								TURBINES
10	1	13								TURBOMACHINERY
10	2									POWER SOURCES
10	2	1								AUXILIARY POWER PLANTS
10	2	2								CONVERTERS
10	2	3								FUEL CELLS
10	2	4								GENERATORS
10	2	5								INVERTERS
10	2	6								MAGNETOHYDRODYNAMIC DEVICES
10	2	7								NUCLEAR POWER SOURCES
10	2	7	1							NUCLEAR FUSION
10	2	7	2							NUCLEAR REACTOR WITH THERMOELECTRIC CONVERTER
10	2	8								PULSE POWER
10	2	9								RADIOISOTOPE THERMOELECTRIC GENERATOR
10	2	10								SOLAR CONCENTRATOR WITH THERMIONIC GENERATOR
10	2	11								SOLAR CELL DEVICES
10	2	12								THERMIONIC DEVICES
10	2	13								THERMOELECTRIC DEVICES

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
10	3									ENERGY STORAGE
10	3	1								BATTERIES
10	3	1	1							AIRCRAFT BATTERIES
10	3	1	2							PRIMARY BATTERIES
10	3	1	3							SECONDARY BATTERIES
10	3	1	4							SILVER CADIUM BATTERIES
10	3	1	5							SILVER ZINC BATTERIES
10	3	2								CAPACITORS (ENERGY STORAGE)
10	3	3								COMPRESSED SPRINGS
10	3	4								POWER CONDITIONING
10	3	5								WIND TUNNEL ACCELERATORS

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	
										SCOPE
11										MATERIALS
11	1									ADHESIVES AND SEALS
11	1	1								ADHESIVE BINDERS
11	1	2								GASKETS
11	1	3								GLUE
11	1	4								SEALANTS
11	2									CERAMICS, REFRACTORIES, AND GLASSES
11	2	1								BRICK
11	2	2								CEMENTS AND CONCRETE
11	2	3								CERAMICS
11	2	4								CERMETS
11	2	5								GLASSES
11	2	6								NONMETALLIC REFRACTORY MATERIALS
11	2	7								PORCELAIN
11	2	8								REFRACTORIES
11	2	9								TILES
11	3									COATINGS, COLORANTS, AND FINISHES
11	3	1								ANTIDETECTION
11	3	2								ANTITOXICANTS
11	3	3								CAMOUFLAGE
11	3	4								DYES
11	3	5								EDIBLE COATINGS
11	3	6								HIGH CONSPICUITY
11	3	7								INFRARED COATINGS
11	3	8								MARKING
11	3	9								METALLIC
11	3	10								ORGANIC
11	3	11								PAINTS
11	3	12								PIGMENTS
11	3	13								PLASTIC COATINGS

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO: FIELD | GROUP | SECTION | UNIT

CATEGORY: 1 RESEARCH; 2 EXPLORATORY DEVELOPMENT; 3 ADVANCED DEVELOPMENT; 4 ENGINEERING DEVELOPMENT; 5 OPERATIONAL DEVELOPMENT; 6 MANAGEMENT AND SUPPORT

NAME AND ADDRESS OF APPLICANT

FIELD	GROUP	SECTION	UNIT	SCOPE
11	3	14		PAINT PRIMERS
11	3	15		PROTECTIVE ELECTROCHEMICALS
11	3	16		RUBBER COATINGS
11	3	17		VARNISHES
11	4			COMPOSITE MATERIALS
11	4	1		FOAMS (COMPOSITE MATERIALS)
11	4	2		FOIL PLASTIC FILM
11	4	3		OTHER LAMINATES
11	4	4		PLASTIC FILM-PAPER
11	4	5		RADAR ABSORBER MATERIALS
11	4	6		WOOD-METAL COMPOSITES
11	4	7		WOOD-PAPER COMPOSITES
11	5			FIBERS AND TEXTILES
11	5	1		NATURAL FIBERS, THREADS, YARNS
11	5	2		NATURAL TEXTILES
11	5	3		SYNTHETIC FIBERS, THREADS, YARNS
11	5	4		SYNTHETIC TEXTILES
11	6			METALLURGY AND METALLOGRAPHY
11	6	1		CORROSIVE STUDIES
11	6	2		EXTRACTIVE AND PHYSICAL METALLURGY
11	6	3		HEAT RESISTANT METALS AND ALLOYS
11	6	4		MICROSTRUCTURE
11	6	5		PHYSICAL AND MECHANICAL PROPERTIES
11	6	6		REFINING AND PRODUCTION
11	7			MISCELLANEOUS MATERIALS
11	7	1		ANIMAL PRODUCTS
11	7	2		ENERGY DISSIPATING MATERIALS
11	7	3		MAGNETIC MATERIALS
11	7	4		NON-MAGNETIC MATERIALS
11	7	5		PIGMENTS
11	7	6		SOIL STABILIZERS

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO. FIELD	GROUP	SECTION	UNIT	CATEGORY 1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
11	8									OILS, LUBRICANTS, AND HYDRAULIC FLUIDS
11	9									PLASTICS
11	9	1								ABLATIVE PLASTICS COMPOSITES
11	9	2								PLASTIC FORMS
11	9	2	1							BARRIER MATERIALS
11	9	3								PLASTIC QUALITIES
11	9	3	1							FOAMS (PLASTIC)
11	9	3	2							PRODUCTION PROPERTIES AND PERFORMANCE (PLASTICS)
11	9	3	3							PLASTICIZERS (PLASTICS)
11	9	3	4							RESINS
11	9	4								REINFORCED PLASTICS AND LAMINATES
11	10									RUBBERS
11	10	1								ELASTOMERS
11	10	2								NATURAL RUBBERS
11	10	3								PRODUCTION METHODS (RUBBERS)
11	10	4								PROPERTIES AND PERFORMANCE (RUBBERS)
11	10	5								RUBBER PRODUCTS
11	10	6								SYNTHETIC ELASTOMERS
11	11									SOLVENTS, CLEANERS, AND ABRASIVES
11	12									WOOD AND PAPER PRODUCTS
11	12	1								CONVERTED PRODUCTS
11	12	2								CUSHIONING
11	12	3								ENERGY DISSIPATING MATERIALS AND STRUCTURES (WOOD AND PAPER)
11	12	4								MULTIWALL SYSTEMS
11	12	5								TUBES (WOOD AND PAPER)

NAME AND ADDRESS OF APPLICANT

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO. | CATEGORY | NAME AND ADDRESS OF APPLICANT

FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
12										MATHEMATICAL SCIENCES
12	1									MATHEMATICS AND STATISTICS
12	1	1								EXPERIMENTATION AND CORRELATION
12	1	1	1							TEST OF SIGNIFICANCE AND CONFIDENCE INTERVALS
12	1	1	2							DESIGN AND ANALYSIS OF EXPERIMENTS
12	1	1	3							CORRELATION
12	1	1	4							CURVE FITTING
12	1	1	5							SHORTCUT METHODS OF ANALYSIS
12	1	2								MAINTAINABILITY
12	1	3								MANAGERIAL APPLICATIONS
12	1	4								MATHEMATICAL STATISTICS AND PROBABILITY THEORY
12	1	4	1							ESTIMATION AND INFERENCE
12	1	4	2							DISTRIBUTION FUNCTIONS
12	1	4	3							PROBABILITY THEORY
12	1	4	4							TRANSFORMATIONS
12	1	5								MEASUREMENT AND CONTROL
12	1	6								METHODOLOGY
12	1	7								NUMERICAL ANALYSIS
12	1	8								RELIABILITY
12	1	9								STATISTICS
12	1	9	1							STATISTICAL PROCESS CONTROL
12	1	9	2							SAMPLE PROCEDURES AND PLANS
12	1	9	3							MANAGEMENT OF QUALITY CONTROL
12	2									OPERATIONS RESEARCH

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
13										MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING
13	1									AIR CONDITIONING, HEATING, LIGHTING, AND VENTILATING
13	1	1								AIR CONDITIONING
13	1	2								HEATING
13	1	3								LIGHTING
13	1	4								VENTILATION
13	1	5								REFRIGERATION
13	2									CIVIL ENGINEERING
13	2	1								AIR POLLUTION CONTROL
13	2	2								HYDRAULICS
13	2	3								WATER SUPPLY AND DISTRIBUTION
13	3									CONSTRUCTION EQUIPMENT, MATERIALS AND SUPPLIES
13	4									CONTAINERS AND PACKAGING
13	4	1								PACKAGING DESIGN
13	4	2								PERFORMANCE (PACKAGING)
13	4	3								PACKAGING PRODUCTS
13	4	4								TESTING
13	4	4	1							COMPRESSION TESTING (PACKAGING)
13	4	4	2							DROP TESTING (PACKAGING)
13	4	4	3							DRUM TESTING (PACKAGING)
13	4	4	4							INCLINE IMPACT
13	4	4	5							RAIN AND IMMERSION
13	4	4	6							VIBRATION
13	5									COUPLINGS, FASTENERS AND JOINTS
13	6									GROUND TRANSPORTATION EQUIPMENT
13	6	1								AMPHIBIOUS VEHICLES
13	6	2								RAILROAD EQUIPMENT
13	6	2	1							LOCOMOTIVES
13	6	2	2							OTHER ROLLING STOCK
13	6	2	3							SELF-PROPELLED AUXILLIARY CARS
13	6	3								SMALL LOAD CARRIERS (GROUND TRANSPORTATION EQUIPMENT)
13	6	3	1							LOAD PLATFORMS
13	6	3	2							MOTOR CYCLES AND SCOOTERS
13	6	3	3							SPECIAL TERRAIN VEHICLES
13	6	4								SPECIAL APPLICATION VEHICLES
13	6	4	1							AIRCRAFT TRAILERS

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY							NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL SYSTEMS DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6		SCOPE
13	6	4	2								BOMB TRAILERS
13	6	4	3								CRASH VEHICLES
13	6	4	4								DOLLIES
13	6	4	5								FORK LIFT AND MATERIAL HANDLING
13	6	4	6								FUEL TANKERS
13	6	4	7								WRECKERS
13	6	5									SUSPENSION SYSTEMS (SPECIAL VEHICLES)
13	6	5	1								SPRING AND DAMPING MEDIA
13	6	5	2								TIRES
13	6	5	3								WHEELED VEHICLE SYSTEMS
13	6	5	4								WHEELS
13	6	6									TOWED VEHICLES
13	6	6	1								BULK MATERIAL HAULERS
13	6	6	2								SEMITRAILERS
13	6	6	3								TRAILERS
13	6	6	4								VAN BODIES
13	6	7									TRACKED TRANSPORT VEHICLES
13	6	7	1								GENERAL CARGO
13	6	7	2								MISSILE AND AMMUNITION TRANSPORT
13	6	8									TRANSPORT WHEELED VEHICLES
13	6	8	1								PASSENGER CARS
13	6	8	2								TRUCK-TRACTORS
13	6	8	3								TRUCKS OTHER BODY TYPE
13	6	8	4								TRUCKS CARGO
13	6	9									UNCONVENTIONAL VEHICLES
13	6	9	1								LEVERED MACHINES
13	6	9	2								MARGINAL TERRAIN VEHICLES
13	6	9	3								SINGLE PURPOSE VEHICLES
13	6	9	4								SLEDS
13	6	9	5								SNOW VEHICLES
13	6	9	6								UNIQUE CONCEPTS (VEHICLES)
13	6	10									VEHICLE AUXILIARY EQUIPMENT
13	6	10	1								CLIMATIC KITS
13	6	10	2								FLOTATION AIDS
13	6	10	3								TRACTION AIDS
13	6	10	4								VEHICLE HEATERS
13	6	11									VEHICLE COMPONENTS
13	6	11	1								ENGINE COOLING SYSTEMS
13	6	11	2								STEERING, CONTROL AND BRAKES
13	6	11	3								VEHICLE STRUCTURE
13	6	12									VEHICULAR POWER CONVERSION SYSTEMS
13	6	12	1								DRIVE AXLES
13	6	12	2								DRIVE LINE COMPONENTS
13	6	12	3								ELECTRICAL DRIVERS
13	6	12	4								FINAL DRIVES
13	6	12	5								HYDROKINETIC TRANSMISSIONS
13	6	12	6								HYDROMECHANICAL TRANSMISSIONS
13	6	12	7								HYDROSTATIC TRANSMISSIONS
13	6	12	8								TRANSMISSION MECHANICALS
14	6	13									WEAPONS HANDLING EQUIPMENT
14	7										HYDRAULIC AND PNEUMATIC EQUIPMENT

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
13	7	1								ACCUMULATORS (HYDRAULIC AND PNEUMATIC)
13	7	2								ACTUATORS (HYDRAULIC AND PNEUMATIC)
13	7	3								CHECKOUT EQUIPMENT
13	7	4								COMPRESSORS
13	7	5								CONTROL VALVES
13	7	6								DISTRIBUTION EQUIPMENT (HYDRAULIC AND PNEUMATIC)
13	7	7								FILTERS
13	7	8								MARINE PUMPS AND MOTORS
13	8									INDUSTRIAL PROCESSES
13	8	1								ARC DRESSING
13	8	2								BRAZING
13	8	3								CASTING
13	8	4								CHEMICAL OR ELECTROCHEMICAL MILLING
13	8	5								COLD FORMING
13	8	6								CONVEYORS
13	8	7								DESIGN AUTOMATION
13	8	8								ELECTROFORMING (ELECTRODEPOSITION)
13	8	9								ENGINEERING DOCUMENTATION
13	8	10								ENGINEERING LIAISON
13	8	11								EXTRUSION AND DRAWING
13	8	12								FABRICATION METALLURGY, TECHNIQUES
13	8	13								FORGING, HOT WORKING
13	8	14								GRINDING AND POLISHING
13	8	15								HIGH ENEGY RATE FORMING
13	8	16								MACHINING
13	8	17								MECHANICAL, STRUCTURAL DRAFTING
13	8	18								POWDER METALLURGY
13	8	19								QUALITY ASSURANCE
13	8	20								ROLLING
13	8	21								SPINNING

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
13	8	22								STAMPING AND COINING
13	8	23								WELDING
13	9									MACHINERY AND TOOLS
13	9	1								MACHINE ELEMENTS
13	9	2								MACHINE TOOLS - METAL WORKING
13	9	3								MACHINE TOOLS - WOOD-WORKING
13	9	4								PERISHABLE TOOLS
13	9	5								SEMIPERMANENT AUXILIARY TOOLS
13	10									MARINE ENGINEERING
13	10	1								SUBMARINE ENGINEERING
13	11									PUMPS, FILTERS, PIPES, TUBING AND VALVES
13	12									SAFETY ENGINEERING
13	13									STRUCTURAL ENGINEERING

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO. | CATEGORY | NAME AND ADDRESS OF APPLICANT

FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
14										METHODS AND EQUIPMENT
14	1									COST EFFECTIVENESS
14	1	1								HUMAN RELIABILITY
14	1	2								OPERATIONS RESEARCH
14	1	3								OPTIMIZATION METHODS
14	1	4								PERSONNEL COST/EFFECTIVENESS
14	1	5								STANDARDIZATION
14	1	6								VALUE ENGINEERING
14	1	7								SYSTEM EFFECTIVENESS
14	2									LABORATORIES, TEST FACILITIES AND TEST EQUIPMENT
14	2	1								TEST FACILITY DESIGN, CHECKOUT
14	2	1	1							SHOCK TUNNELS
14	2	1	2							HYPERBALLISTIC RANGES
14	2	1	3							WIND TUNNELS
14	2	2								LABORATORY AND FACILITY OPERATION
14	2	2	1							TESTING TECHNIQUES
14	2	3								LABORATORIES
14	2	3	1							CHEMICAL LABORATORY
14	2	3	2							MECHANICAL DESIGN
14	2	3	3							METALLURGICAL DESIGN
14	2	3	4							PHYSICAL TESTING
14	2	3	5							ENVIRONMENTAL TESTING LABORATORIES
14	2	4								OPERATION OF TEST FACILITIES
14	2	5								STAFFING-LABORATORIES
14	2	6								TEST EQUIPMENT DESIGN, DEVELOPMENT
14	2	6	1							WIND TUNNEL INSTRUMENTATION
14	2	6	2							WIND TUNNEL COMPONENTS
14	2	7								TEST EQUIPMENT (LABORATORY)
14	2	7	1							FORCE MEASUREMENT
14	2	7	2							PRESSURE MEASUREMENT
14	2	7	3							RADIATION MEASUREMENT
14	2	7	4							STRAIN MEASUREMENT
14	2	7	5							SUPPLEMENTARY ELECTRONIC EQUIPMENT
14	2	7	6							TEMPERATURE MEASUREMENT
14	2	7	7							TIME MEASUREMENT
14	2	7	8							VELOCITY MEASUREMENT
14	2	7	9							VIBRATION MEASUREMENT
14	2	8								TEST FACILITIES
14	2	8	1							AERONAUTICAL
14	2	8	2							DATA EVALUATION AND REDUCTION
14	2	8	3							ENVIRONMENTAL TEST FACILITY

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FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
14	2	8	4							GROUND COMBAT VEHICLE AND TRANSPORATION EQUIPMENT
14	2	8	5							MISSILE TEST FACILITIES
14	2	8	6							NON-DESTRUCTIVE TESTING
14	2	8	7							PROVING GROUNDS
14	2	8	8							SPACE AND ALTITUDE SIMULATOR
14	2	8	9							WEAPONRY
14	3									RECORDING DEVICES
14	3	1								DIELECTRIC RECORDING SYSTEMS
14	3	2								DISC
14	3	3								ELECTROSTATIC RECORDERS
14	3	4								RECORDING FILM
14	3	5								MAGNETIC RECORDERS
14	3	6								TRANSDUCER DESIGN
14	3	7								ELECTRONIC EQUIPMENT COMPATABILITY
14	3	7	1							CONFIGURATION CONTROL
14	3	7	2							INTERFERENCE ANALYSIS
14	3	7	3							INTERFERENCE TESTING
14	3	7	4							INTERFERENCE REDUCTION
14	4									RELIABILITY
14	4	1								COMPONENT RELIABILITY PARTS CONTROL
14	4	2								CORRECTIVE ACTION SYSTEMS
14	4	3								DATA ANALYSIS
14	4	4								DATA COLLECTION
14	4	5								FAILURE DATA
14	4	6								MAINTAINABILITY
14	4	7								QUALITY CONTROL
14	4	8								RELIABILITY ANALYSIS
14	4	9								RELIABILITY TEST AND FAILURE ANALYSIS
14	4	10								SYSTEM RELIABILITY DESIGN CONTROL
14	5									REPROGRAPHY
14	5	1								REPRODUCTION TECHNIQUES
14	5	1	1							AUTORADIOGRAPHY
14	5	1	2							BLUEPRINT
14	5	1	3							DIAZO
14	5	1	4							ELECTROSTATIC COPIERS
14	5	1	5							HECTOGRAPH
14	5	1	6							LITHOGRAPHY
14	5	1	7							PHOTOSTATICS
14	5	1	8							PRINTING

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FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	
										SCOPE
14	5	2								PHOTOGRAPHY
14	5	2	1							CAMERAS AND PROJECTORS
14	5	2	2							PHOTOGRAPHIC PROCESSES, TECHNIQUES AND EQUIPMENT
14	5	2	3							PHOTOGRAPHIC EQUIPMENT

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FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
15										MILITARY SCIENCES
15	1									ANTISUBMARINE WARFARE
15	1	1								COUNTERMEASURES
15	1	1	1							AMPLIFIERS, CONVERTERS AND DETECTORS
15	1	2								MINE COUNTERMEASURES
15	1	3								NAVAL ARCHITECTURE - SUBMARINES
15	1	4								NAVAL ARCHITECTURE - SURFACE SHIPS
15	1	5								NAVIGATION (ANTISUBMARINE WARFARE)
15	1	6								OCEANOGRAPHY
15	1	6	1							ARCTIC OCEANOGRAPHY
15	1	6	2							TROPIC OCEANOGRAPHY
15	1	7								RADAR AND RADIO FOR ANTISUBMARINE WARFARE
15	1	7	1							TRACKING EQUIPMENT
15	1	7	2							RADAR DISPLAY
15	1	7	3							RADAR TECHNIQUES (ANTISUBMARINE WARFARE)
15	1	8								TORPEDO COUNTERMEASURES
15	1	9								VULNERABILITY STUDIES (ANTISUBMARINE WARFARE)
15	2									CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL WARFARE
15	2	1								BW-CW AGENTS
15	2	1	1							BIOLOGICAL AGENTS
15	2	2								CBR ORDNANCE
15	2	3								CHEMICAL WARFARE EQUIPMENT AND MATERIALS
15	2	3	1							FLAMETHROWERS
15	2	3	2							INCENDIARIES
15	2	3	3							PROTECTION AND DECONTAMINATION
15	2	3	4							PYROTECHNICS (CHEMICAL WARFARE)
15	2	3	5							TOXIC CHEMICAL AGENTS
15	2	3	6							ANTIMATERIAL AGENTS
15	2	4								COUNTERMEASURES
15	2	5								OPERATIONS AND SYSTEM REQUIREMENTS
15	2	6								RADIOLOGICAL DEFENSE
15	2	6	1							ATOMIC RADIATION EFFECTS ON MATERIALS AND COMPONENTS
15	2	7								RADIOLOGICAL WEAPONS
15	3									DEFENSE
15	3	1								ANTIAIRCRAFT DEFENSE SYSTEMS
15	3	1								ANTIAIRCRAFT DEFENSE SYSTEM
15	3	1	1							ACTIVE AND PASSIVE DEFENSE SYSTEMS
15	3	1	2							ANTIAIRCRAFT INSTRUMENTATION
15	3	1	3							HUMAN PILOT CONTROL AND TRACKING CAPABILITIES
15	3	1	4							MAPPING SYSTEMS, AIRBORNE

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CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
15	3	1	5							RADAR AND RADIO FOR ANTIAIRCRAFT SYSTEMS
15	3	1	6							SURVEILLANCE SYSTEMS, AIRBORNE
15	3	2								ANTI-MISSILE DEFENSE SYSTEMS
15	3	2	1							METEOROLOGY (ANTI-MISSILE)
15	3	2	2							NUCLEAR BURSTS
15	3	2	3							NUCLEAR PROPULSION (ANTIMISSILE)
15	3	2	4							NUCLEAR RADAR
15	3	3								ANTISATELLITE DEFENSE SYSTEMS
15	3	3	1							SPACECRAFT AND SPACE EQUIPMENT
15	3	3	2							SPACECRAFT DESIGN AND FLIGHT
15	3	3	3							SPACECRAFT STRUCTURES (ANTISATELLITE SYSTEM)
15	4									INTELLIGENCE
15	4	1								AUTOMATED INTELLIGENCE SENSORS
15	4	1	1							ACOUSTIC SENSORS
15	4	1	2							CHEMICAL INTELLIGENCE
15	4	1	3							ELECTRO-OPTICAL IMAGING SENSORS
15	4	1	4							IR IMAGING SENSORS
15	4	1	5							PHOTOGRAPHIC SENSORS
15	4	1	6							SEISMIC SENSORS
15	4	1	7							SENSOR SUBSYSTEM CONTROL AND DATA RECORDING
15	4	2								DATA HANDLING AND DISPLAY
15	4	2	1							CONVERSION, PHOTOGRAPHIC, ELECTRONIC, ELECTRO-OPTICAL
15	4	2	2							DISSEMINATION AND REPRODUCTION ELECTRONIC AND GRAPHICAL
15	4	2	3							PRESENTATION-AUTOMATED DATA
15	4	2	4							STORAGE AND RETRIEVAL-AUTOMATED DATA
15	4	3								IMAGE DATA RECORDING MEDIA
15	4	3	1							E-O AND UV TARGET ACQUISITION + TRACKING
15	4	3	2							IR RADIATION DETECTORS
15	4	3	3							PHOTOGRAPHIC PRINTING AND REPRODUCTION
15	4	3	4							UV RADIATION DETECTORS
15	4	3	5							VIDEO RECORDING DISPLAY READOUT
15	4	3	6							VISIBLE RADIATION DETECTORS
15	4	4								OPERATIONS (INTELLIGENCE)
15	4	4	1							INTELLIGENCE PARAMETER STUDIES
15	4	4	2							INTELLIGENCE SYSTEMS STUDIES
15	4	5								PSYCHOLOGICAL WARFARE (INTELLIGENCE)
15	4	6								RECONNAISSANCE AND SURVEILLANCE TECHNOLOGY
15	4	6	1							ATMOSPHERIC EFFECTS ON PHOTOGRAPHY
15	4	6	2							ILLUMINATION TECHNIQUES FOR NIGHT PHOTOGRAPHY
15	4	6	3							IMAGE EVALUATION AND INTERPRETATION
15	4	6	4							PHOTOGRAPHIC PROCESSING TECHNIQUES
15	5									LOGISTICS
15	5	1								AIRCRAFT SYSTEMS
15	5	1	1							SUPPLY TRANSPORT
15	5	1	2							SUPPLY STORAGE
15	5	1	3							TURN AROUND TIME
15	5	2								AIRDROP SYSTEMS (LOGISTICS)

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FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
15	5	3								CONSUMPTION DATA
15	5	4								ENVIRONMENTAL EXPOSURE PROFILE
15	5	5								GROUND TRANSPORTATION EQUIPMENT (LOGISTICS)
15	5	5	1							AUTOMOTIVE PARTS AND ACCESSORIES
15	5	5	2							RAILROAD EQUIPMENT LOGISTICS
15	5	5	3							SPECIAL PURPOSE VEHICLES
15	5	5	4							TRUCKS
15	5	6								ORGANIZATIONAL REQUIREMENTS COMPUTATION
15	5	7								PERSONAL EQUIPMENT DESIGN, TEST
15	5	8								REQUISITION AND ISSUE PATTERN
15	5	9								SPECIFICATIONS
15	5	10								STANDARDIZATION
15	5	11								SUPPLY REQUIREMENTS
15	5	12								TRANSPORTATION MANAGEMENT
15	5	12	1							AIR TRANSPORTATION LOGISTICS
15	5	12	2							HIGHWAY TRANSPORTATION LOGISTICS
15	5	12	3							RAIL TRANSPORTATION LOGISTICS
15	5	12	4							WATER TRANSPORTATION LOGISTICS
15	6									NUCLEAR WARFARE
15	6	1								DESIGN OF NUCLEAR DEVICES
15	6	1	1							ADVANCED POWER PLANT DEVICES
15	6	1	2							GROUND NUCLEAR POWER PLANTS
15	6	1	3							WARHEADS AND FUZES (NUCLEAR)
15	6	1	4							WEAPON DEVELOPMENT AND USE
15	6	2								NUCLEAR EXPLOSION DAMAGE
15	6	2	1							AIR INDUCED EFFECTS
15	6	2	2							AIR BLAST EFFECTS
15	6	2	3							COSMIC RADIATION
15	6	2	4							CRATERING, DEBRIS + ROCKETS
15	6	2	5							DIRECT INDUCED EFFECTS
15	6	2	6							ELECTROMAGNETIC RADIATION FROM NUCLEAR EXPLOSION
15	6	2	7							NUCLEAR REACTIONS (WEAPONS EFFECTS)
15	7									OPERATIONS, STRATEGY, AND TACTICS
15	7	1								AIRBORNE OPERATIONS
15	7	2								AIRDROP OPERATIONS
15	7	3								COMMUNICATION OPERATIONS
15	7	3	1							COMBAT INFORMATION CENTERS
15	7	3	2							OPTICAL COMMUNICATIONS
15	7	3	3							RADIO COMMUNICATION
15	7	3	4							SOUND RECORDING AND AMPLIFICATIONS
15	7	3	5							TELEVISION
15	7	3	6							WIRE COMMUNICATIONS
15	7	4								DETECTION TECHNIQUES

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15	7	4	1							INFRARED DETECTORS
15	7	4	2							OPTICAL DETECTION
15	7	4	3							RADAR AND RADIO TARGET DETECTION
15	7	4	4							RADAR TECHNIQUES (DETECTION)
15	7	5								GROUND TRANSPORTATION EQUIPMENT
15	7	6								GUIDED MISSILE OPERATIONS
15	7	7								MEDICAL SUPPLIES AND EQUIPMENT
15	7	8								MILITARY SCIENCES AND OPERATIONS
15	7	8	1							ATTACK
15	7	8	3							LOGISTICS (OPERATION)
15	7	8	4							MILITARY OPERATIONS ANALYSIS
15	7	8	5							OPERATIONS (MILITARY SCIENCES)
15	7	8	6							ORGANIZATION AND ADMINISTRATION
15	7	8	7							PSYCHOLOGICAL OPERATIONS
15	7	8	8							STRATEGY AND TACTICS
15	7	9								NAVAL ARCHITECTURE-SUBMARINES (STRATEGY AND TACTICS)
15	7	10								ORDNANCE EQUIPMENT AND SUPPLIES
15	7	11								QUARTERMASTER EQUIPMENT AND SUPPLIES
15	7	12								RECONNAISSANCE AND SURVEILLANCE SYSTEMS
15	7	13								TRANSPORTATION (OPERATIONS, STRATEGY, AND TACTICS)
15	7	13	1							HIGHWAY TRANSPORTATION OPERATIONS
15	7	13	2							RAIL TRANSPORTATION OPERATIONS
15	7	13	3							WATER TRANSPORTATION
15	7	14								WEAPON SYSTEMS REQUIREMENTS
15	7	14	1							SPACE WEAPONRY
15	7	15								ANTI-AIR WARFARE
15	7	16								ANTI-SURFACE WARFARE

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16										MISSILE TECHNOLOGY
16	1									MISSILE LAUNCHING AND GROUND SUPPORT
16	1	1								AEROBALLISTICS
16	1	2								ELECTRONIC GROUND SUPPORT EQUIPMENT
16	1	3								LAUNCH FACILITY DESIGN
16	1	4								LAUNCHING FROM AIRCRAFT
16	1	5								MECHANICAL GROUND SUPPORT EQUIPMENT
16	1	5	1							EGG CRATE
16	1	5	2							TUBE
16	1	5	3							ZERO LENGTH RAIL
16	1	6								STATIC FIRING TEST
16	1	7								TEST AND CHECKOUT
16	1	7								RANGE SAFETY
16	2									MISSILE TRAJECTORIES
16	2	1								AERODYNAMIC HEATING
16	2	2								AIRLOADS
16	2	3								EXPERIMENTAL AERODYNAMICS
16	2	3	1							AEROPHYSICS
16	2	3	2							FLOW FIELDS
16	2	3	3							OBSERVABLE WAKES
16	2	4								FLIGHT MECHANICS
16	2	4	1							BOUNDARY LAYERS
16	2	4	2							DRAG AND LIFT
16	2	4	3							FLIGHT PATHS
16	2	4	4							PERFORMANCE
16	2	4	5							STABILITY AND CONTROL
16	2	4	6							THEORETICAL AERODYNAMICS
16	2	5								FLIGHT TEST ANALYSIS
16	2	6								IMPACT PREDICTION
16	2	7								STABILITY AND CONTROL
16	2	8								WARHEAD BALLISTICS
16	2	9								WARHEAD KILL MECHANICS
16	3									MISSILE WARHEADS AND FUZES
16	3	1								CONVENTIONAL WARHEADS
16	3	1	1							EXPLOSIVE
16	3	1	2							FUZES
16	3	1	3							TARGET VULNERABILITY
16	3	1	4							WARHEADS
16	4	7								GUIDANCE FUZING COMBINATION

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16	3	3								NUCLEAR WARHEADS
16	3	3	1							AIR TARGETS
16	3	3	2							SUB-SURFACE TARGETS
16	3	3	3							SURFACE TARGET
16	4									MISSILES
16	4	1								AIR AND SPACE LAUNCHED MISSILES
16	4	2								GENERAL MISSILE THEORY
16	4	2	1							AVIONICS SYSTEM DESIGN AND ANALYSIS
16	4	2	2							CONFIGURATION DESIGN
16	4	2	3							CONTROL SYSTEM DESIGN
16	4	2	4							ELECTRO-MECHANICAL DESIGN, AND INSTALLATION
16	4	2	5							FATIGUE
16	4	2	6							MAINTENANCE
16	4	2	7							MISSILE COMPONENTS
16	4	2	8							MISSILE CONSTRUCTION
16	4	2	9							MISSILE DAMAGE ASSESSMENT
16	4	2	10							MISSILE DESIGN
16	4	2	11							MISSILE PERFORMANCE
16	4	2	12							MISSILE VULNERABILITY STUDIES
16	4	2	13							PROPULSION SYSTEM, DESIGN, AND INSTALLATION
16	4	2	14							STRUCTURAL ANALYSIS
16	4	2	15							STRUCTURAL DESIGN
16	4	2	16							STRUCTURAL TEST
16	4	2	17							SYSTEM DESIGN AND ANALYSIS
16	4	2	18							SYSTEM SAFETY
16	4	2	19							VIBRATION AND DYNAMIC RESPONSE
16	4	2	20							VULNERABILITY STUDIES
16	4	2	21							WEIGHT CONTROL
16	4	3								RANGE OPERATION
16	4	3	1							FREQUENCY INTERFERENCE CONTROL
16	4	3	2							LAUNCHING OPERATION
16	4	3	3							LOGISTICS
16	4	3	4							MANAGEMENT
16	4	3	5							OPERATIONAL PROCEDURES
16	4	3	6							RANGE SAFETY
16	4	3	7							VEHICLE FLIGHT PLANNING
16	4	4								SURFACE-LAUNCHED MISSILES
16	4	5								SURFACE LAUNCHED ROCKETS AND MISSILES
16	4	5	1							AERODYNAMICS
16	4	5	2							BALLISTIC RE-ENTRY VEHICLES
16	4	5	3							CHAFF DISPENSERS
16	4	5	4							COMPONENTS
16	4	5	5							DECOY DEPLOYMENT SYSTEMS
16	4	5	6							FLIGHT TEST
16	4	5	7							HEAT SHIELDS
16	4	5	8							PENETRATION AIDS
16	4	5	9							RADAR CROSS SECTION
16	4	5	10							SHOCK ISOLATORS
16	4	5	11							STAGE SEPARATION
16	4	5	12							STRUCTURE
16	4	5	13							SUB SYSTEMS
16	4	5	14							SYSTEMS INTEGRATION

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16	4	5	15							TEST AND EVALUATION
16	4	5	16							TEST EQUIPMENT
16	4	5	17							VULNERABILITY STUDIES
16	4	5	18							WIND TUNNEL TEST
16	4	6								UNDERWATER-LAUNCHED MISSILES

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17										NAVIGATION, COMMUNICATIONS, DETECTION, AND COUNTERMEASURES
17	1									ACOUSTIC DETECTION
17	1	1								SONAR
17	1	2								SONO BUOYS
17	1	3								SOUND LOCATION EQUIPMENT
17	1	4								SOUND RANGING EQUIPMENT
17	1	5								TERMINAL GUIDANCE
17	1	6								UNDERWATER ACOUISTICS
17	2									COMMUNICATIONS
17	2	1								COMMAND AND CONTROL
17	2	2								COMMUNICATION APPLICATIONS
17	2	2	1							AEROSPACE RELAY
17	2	2	2							MILLIMETER FREQUENCY
17	2	2	3							MF-HF
17	2	2	4							MULTIPLE ACCESS (MULTI-SUBSCRIBER)
17	2	2	5							SATELLITE RELAY
17	2	2	6							SHF
17	2	2	7							SUB-MILLIMETER FREQUENCY
17	2	2	8							VHF-UHF
17	2	2	9							VLF-LF
17	2	3								COMMUNICATION TECHNIQUES
17	2	3	1							ANALYSIS AND SYNTHESIS
17	2	3	2							ANTI JAM
17	2	3	3							HIGH SPEED DIGITAL
17	2	3	4							INFORMATION COMPRESSION
17	2	3	5							MODULATION + DEMODULATION
17	2	3	6							WIDEBAND
17	2	4								DATA DISPLAY
17	2	5								DATA TRANSMISSION
17	2	5	1							DIGITAL
17	2	5	2							ANALOGUE
17	2	6								ELECTRONIC AND ELECTROMAGNETIC COMMUNICATION SYSTEMS
17	2	6	1							INFRARED COMMUNICATIONS
17	2	6	2							LIGHT/LASER COMMUNICATIONS
17	2	6	3							OPTICAL COMMUNICATIONS
17	2	6	4							ULTRA VIOLET COMMUNICATIONS
17	2	7								RADIO COMMUNICATION SYSTEMS
17	2	7	1							EQUIPMENT EFFECTIVENESS
17	2	7	2							PERSONNEL COMMUNICATIONS
17	2	7	3							RECEIVERS
17	2	7	4							RELAY REPEATERS
17	2	7	5							TELETYPES
17	2	7	6							TRANSCIEVERS

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY							NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT		SCOPE
17	2	7	7								TRANSMITTERS
17	2	8									RADIO TRACKING
17	2	9									SATELLITE COMMUNICATIONS
17	2	9	1								ACTIVE
17	2	9	2								PASSIVE
17	2	9	3								SATELLITE COMMUNICATIONS REPEATERS
17	2	10									TELEVISION
17	2	10	1								SLOW SKAN TV AND FACSIMILE
17	2	10	2								DIGITAL VIDEO
17	2	10	3								IMAGE INTENSIFIER
17	2	11									WIRE COMMUNICATIONS
17	2	11	1								TELEGRAPH SYSTEMS
17	2	11	2								TELEPHONE SYSTEMS
17	2	11	3								TELETYPE SYSTEMS
17	3										DIRECTION FINDING
17	3	1									DIRECTION FINDERS COMMUNICATIONS EQUIPMENT
17	3	2									SIGNAL DETECTION
17	3	3									SIGNAL LOCATION
17	4										ELECTROMAGNETIC AND ACOUSTIC COUNTERMEASURES
17	4	1									ANTIJAMMING OF SIGNALS
17	4	2									DECEPTION
17	4	3									DECEPTION JAMMING
17	4	3	1								BROADBAND MICROWAVE TRANSMITTING TUBES CARCINOTRONS
17	4	3	2								BROADBAND UHF - VHF TRANSMITTING TUBES
17	4	3	3								JAMMERS
17	4	3	4								NOISE GENERATORS
17	4	3	5								NOISE JAMMING
17	4	3	6								OPERATIONAL ANALYSIS
17	4	3	7								RADAR HOMING
17	4	3	8								RF RECONNAISSANCE RECEIVERS
17	4	3	9								SIGNAL ANALYSIS
17	4	3	10								SIGNAL DISPLAY
17	4	3	11								SIGNAL PROCESSING
17	4	3	12								SIGNAL RECORDING
17	4	4									ECM DECOYS (MICROWAVE)
17	4	4	1								AEROSOLS
17	4	4	2								BALLOONS
17	4	4	3								CAMOUFLAGE - ABSORBING - MATERIALS, REFLECTING MATERIALS
17	4	4	4								CHAFF
17	4	4	5								CORNER REFLECTORS
17	4	4	6								INFRARED DECEPTION DEVICES
17	4	4	7								INTERROGATOR - RESPONDER BEACONS
17	4	4	8								ROCKETS
17	4	5									ELECTRONIC WARFARE SYSTEMS STUDIES
17	4	6									ECM RECEIVERS

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FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT		SCOPE
17	4	7									INTERCEPTION OF SIGNALS
17	4	8									TRANSMITTERS (ELECTROMAGNETIC AND ACOUSTIC COUNTERMEASURES)
17	5										INFRARED AND ULTRAVIOLET DETECTION
17	5	1									DETECTION OF RADIATION
17	5	2									INFRARED WARNING RECEIVERS
17	5	3									MEASUREMENT OF RADIATION
17	5	4									PHOTODETECTOR APPLICATION
17	5	5									TRACKING RADIATION SOURCE
17	6										MAGNETIC DETECTION
17	6	1									DETECTION OF MAGNETIC FIELD
17	6	2									MEASUREMENT OF MAGNETIC FIELD
17	7										NAVIGATION AND GUIDANCE
17	7	1									ACTIVE SYSTEMS
17	7	2									AIR TRAFFIC CONTROL SYSTEMS
17	7	3									CELESTIAL GUIDANCE
17	7	4									CELESTIAL SYSTEMS
17	7	5									CONTROL APPROACH SYSTEMS
17	7	6									DOPPLER RADAR
17	7	7									DOPPLER RADAR NAVIGATION
17	7	8									ELECTRONIC NAVIGATION, GUIDANCE
17	7	8	1								EXTERNAL LC LORAN
17	7	8	2								OMEGA
17	7	8	3								SATELLITE
17	7	8	4								SELF CONTAINED LC DOPPLER
17	7	9									ELECTRONIC SYSTEMS (NAVIGATION AND GUIDANCE)
17	7	10									ENERGY MANAGEMENT
17	7	11									HEIGHT FINDING AND TERRAIN AVOIDANCE
17	7	12									HOMING DEVICES
17	7	13									HOMING TECHNIQUES
17	7	14									INERTIAL GUIDANCE
17	7	14	1								CONVENTIONAL
17	7	14	2								UNCONVENTIONAL
17	7	15									INERTIAL SYSTEMS

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
17	7	16								INSTRUMENT LANDING SYSTEMS
17	7	17								LORAN
17	7	18								NAVIGATION SYSTEM + DESIGN
17	7	18	1							CONTROL SYSTEM
17	7	18	2							CONTROL DYNAMICS
17	7	18	3							ELECTRO MECHANICAL SYSTEM
17	7	18	4							SIMULATION SYSTEM
17	7	19								NAVIGATIONAL AIDS
17	7	19	1							AIR POSITION INDICATORS
17	7	19	2							ASTROGRAPHS
17	7	19	3							CHARTS
17	7	19	4							CHRONOMETERS
17	7	19	5							COMPASSES
17	7	19	6							DRIFTMETERS
17	7	19	7							GRAPHIC INSTRUMENTS
17	7	20								PASSIVE SYSTEMS
17	7	21								REENTRY GUIDANCE
17	7	22								SATELLITE NAVIGATION
17	7	23								SEMI-ACTIVE SYSTEMS
17	7	24								SHORAN
17	8									OPTICAL DETECTION
17	8	1								BINOCULARS
17	8	2								FLASH SPOTTING OR LOCATING EQUIPMENT
17	8	3								PERISCOPES
17	8	4								SIGHTS AND SIGHTING EQUIPMENT
17	8	5								TELESCOPES
17	8	6								THEODOLITES
17	9									RADAR DETECTION
17	9	1								CONTINUOUS WAVE
17	9	2								RADIOFREQUENCY SIGNAL STUDIES
17	9	3								SEARCH RADARS
17	9	4								TRACKING RADARS
17	10									SEISMIC DETECTION
17	10	1								SEISMIC DETECTION SYSTEMS
17	10	2								SEISMIC WAVE STUDIES

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CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
18										NUCLEAR SCIENCE AND TECHNOLOGY
18	1									FUSION DEVICES (THERMONUCLEAR)
18	1	1								FUSION DEVICE DESIGN AND CONSTRUCTION
18	1	1	1							RADIOACTIVE FUSION DEVICES
18	1	2								OPERATION OF FUSION DEVICES
18	1	3								THEORIES (FUSION DEVICES)
18	2									ISOTOPES
18	2	1								INDUSTRIAL ISOTOPIC APPLICATIONS
18	2	2								ISOTOPE CONCENTRATION
18	2	3								MEDICAL ISOTOPIC APPLICATIONS
18	2	4								NON-SNAP APPLICATIONS (ISOTOPES)
18	2	5								SEPARATION OF ISOTOPES
18	2	6								STABLE ISOTOPES
18	3									NUCLEAR EXPLOSIONS
18	3	1								NUCLEAR EXPLOSION DEVICES
18	3	1	1							NUCLEAR EXPLOSION SIMULATION
18	3	1	2							NUCLEAR EXPLOSION TECHNIQUES
18	3	2								NUCLEAR BLAST EFFECTS
18	3	2	1							BLAST EFFECTS ON ELECTRONICS
18	3	2	2							BLAST EFFECTS ON PERSONNEL
18	3	2	3							BLAST EFFECTS ON STRUCTURES
18	3	3								RADIATION SPECTROMETERS
18	3	4								TESTS (NUCLEAR)
18	3	4	1							NUCLEAR TEST EFFECTS
18	3	4	2							THERMAL EFFECTS (NUCLEAR)
18	4									NUCLEAR INSTRUMENTATION
18	4	1								NUCLEAR INSTRUMENTATION DETECTION DEVICES
18	4	1	1							MOBILE NUCLEAR INSTRUMENTATION
18	4	1	2							RADIATION COUNTERS
18	4	1	3							RADIATION DETECTORS
18	5									NUCLEAR POWER PLANTS
18	5	1								AIRBORNE NUCLEAR POWER PLANTS
18	5	2								GROUND NUCLEAR POWER PLANTS
18	5	3								INTEGRATED ASSEMBLAGE REACTOR TURBOGENERATOR
18	5	4								MARINE NUCLEAR POWER PLANTS

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CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
18	5	5								NUCLEAR POWER FOR SPACE
18	5	6								NUCLEAR POWER PLANT CONTROL AND REGULATION
18	5	7								PROPULSION (NUCLEAR POWER)
18	5	8								STATIONARY NUCLEAR POWER PLANTS
18	6									RADIATION SHIELDING AND PROTECTION
18	6	1								DECONTAMINATION (RADIATION)
18	6	2								ISODOSE PLOTS
18	6	3								NUCLEAR MATERIALS TRANSMISSION
18	6	4								RADIATION ABSORPTION STUDIES
18	6	5								RADIATION SHIELDING DESIGN
18	6	6								SAFETY DEVICES
18	7									RADIOACTIVE WASTES AND FISSION PRODUCTS
18	7	1								NUCLEAR CROSS SECTIONS
18	7	2								NUCLEAR SCATTERING
18	7	3								SEPARATION PROCESSING, HANDLING, STORAGE, AND DISPOSAL
18	7	4								THERMAL REACTIONS (NUCLEAR)
18	8									RADIOACTIVITY
18	8	1								BINDING ENERGY (NUCLEAR)
18	8	2								CRITICAL RADIATION
18	8	3								FALLOUT
18	8	4								INDUCED RADIOACTIVITY
18	8	5								INTERACTION OF RADIOACTIVE MATERIALS
18	8	6								NATURAL RADIOACTIVITY
18	8	7								NUCLEAR ACCELERATORS
18	8	8								RADIACTIVITY DECAY
18	8	9								RADIOLOGY
19	0									REACTOR ENGINEERING AND OPERATION
19	0	1								INTEGRATED EFFECTS (REACTORS)
19	0	2								OPERATION OF REACTORS (NON-POWER)
19	0	3								REACTOR DESIGN
19	0	4								REACTOR ENGINEERING

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CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
18	9	5								THERMAL EFFECTS (REACTORS)
18	10									REACTOR MATERIALS
18	10	1								GAMMA RAYS
18	10	2								NUCLEAR MODERATORS
18	10	3								NEUTRONS
18	10	4								NUCLEAR FISSION FRAGMENTS
18	10	5								PRODUCTION (REACTOR MATERIALS)
18	10	6								REACTOR MATERIAL CONTROL
18	10	7								REACTOR MATERIAL COOLANTS
18	10	8								REACTOR MATERIAL RECLAMATION
18	10	9								SHIELDING
18	10	10								SHIELDING MATERIALS
18	10	11								STRUCTURAL REACTOR MATERIALS
18	10	12								TESTS (REACTOR MATERIALS)
18	10	13								X-RAYS
18	11									REACTOR PHYSICS
18	11	1								FISSION PRODUCTS
18	11	2								NUCLEAR KINETICS
18	11	3								SCATTERING (NUCLEAR)
18	11	4								SIMULATION REACTORS
18	11	5								THEORIES (REACTORS)
18	11	6								THERMALIZATION
18	12									REACTORS (POWER)
18	12	1								OPERATION OF POWER REACTORS
18	12	2								POWER REACTOR CONSTRUCTION
18	12	3								POWER REACTOR DESIGN
18	13									REACTORS (NON-POWER)
18	13	1								NON-POWER REACTOR TESTS
18	13	2								REACTOR PROCESSES
18	13	3								REACTOR PRODUCTION RESEARCH

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18	13	4								TRAINING (NON-POWER REACTORS)
18	14									SNAP TECHNOLOGY
18	14	1								ISOTOPIC SNAP TECHNOLOGY
18	14	1	1							SNAP CONSTRUCTION (ISOTOPIC)
18	14	1	2							SNAP DESIGN
18	14	1	3							SNAP OPERATION
18	14	1	4							SNAP SAFETY MEASURES
18	14	2								REACTOR SNAP TECHNOLOGY
18	14	2	1							REACTOR DESIGN (SNAP)
18	14	2	2							REACTOR OPERATION (SNAP)
18	14	2	3							REACTOR SAFETY MEASURES (SNAP)
18	14	2	4							SNAP CONSTRUCTION (REACTOR)

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NAME AND ADDRESS OF APPLICANT

CODE NO.				CATEGORY						SCOPE
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	
19										ORDNANCE
19	1									AMMUNITION, EXPLOSIVES, AND PYROTECHNICS
19	1	1								AIR-SURFACE PYROTECHNICS
19	1	2								AMMUNITION TYPES
19	1	2	1							AIRCRAFT AMMUNITION
19	1	2	2							ANTIAIRCRAFT ORDNANCE
19	1	2	3							ANTIARMOR
19	1	2	4							ANTIPERSONNEL AMMUNITION
19	1	2	5							ANTISHIP AMMUNITION
19	1	2	6							ANTISUBMARINE AMMUNITION
19	1	2	7							ANTITANK AMMUNITION
19	1	2	8							ARMOR PIERCING
19	1	2	9							FIN-STABILIZED
19	1	2	10							FRAGMENTATION AMMUNITION
19	1	2	11							GRENADES
19	1	2	12							HIGH EXPLOSIVE AMMUNITION
19	1	2	13							INCENDIARY AMMUNITION
19	1	2	14							MORTAR AMMUNITION
19	1	2	15							SMALL ARMS AMMUNITION
19	1	2	16							SPIN-STABILIZED AMMUNITION
19	1	2	17							SPOTTING ROUNDS
19	1	2	18							TRACERS (ORDNANCE)
19	1	2	19							TRAINING AMMUNITION
19	1	3								AMMUNITION COMPONENTS
19	1	3	1							AIMING DEVICES
19	1	3	2							AMMUNITION BOOSTERS
19	1	3	3							AMMUNITION FIRING MECHANISMS
19	1	3	4							AMMUNITION IGNITERS
19	1	3	5							AMMUNITION PRIMERS
19	1	3	6							CARTRIDGE CASES
19	1	3	7							CAVITY LINERS
19	1	3	8							DELAY MECHANISMS
19	1	3	9							PROJECTILE CAPS
19	1	3	10							PROJECTILE CASES
19	1	3	11							ROTATING BANDS
19	1	4								AMMUNITION PROPELLANTS
19	1	4	1							LIQUID PROPELLANTS (AMMUNITION)
19	1	4	2							SOLID PROPELLANTS
19	1	5								CHEMICAL KINETICS IN EXPLOSIVES AND PYROTECHNICS
19	1	6								EXPLOSIVE MATERIALS
19	1	6	1							DEMOLITIONS
19	1	6	2							DESTRUCTORS
19	1	6	3							DETONATORS
19	1	6	4							MODERATE HEAT RESISTANT EXPLOSIVES
19	1	7								FLAMETHROWER FUELS
19	1	8								FLARES
19	1	8	1							AIRCRAFT FLARES
19	1	8	2							COLORED FLARES
19	1	8	3							FLOAT FLARES

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19	1	8	4							PARACHUTE FLARES
19	1	9								FUZES (ORDNANCE)
19	1	9	1							BASE DETONATING
19	1	9	2							BOMB FUZES
19	1	9	3							ELECTRIC FUZES
19	1	9	4							ELECTROMAGNETIC FUZES
19	1	9	5							ELECTROSTATIC FUZES
19	1	9	6							FUNCTIONING ELEMENTS
19	1	9	7							GRENADE FUZES
19	1	9	8							HYDROSTATIC FUZES
19	1	9	9							IMPACT FUZES
19	1	9	10							MAGNETIC FUZES
19	1	9	11							MINE FUZES
19	1	9	12							MORTAR FUZES
19	1	9	13							NOSE FUZES
19	1	9	14							POINT-DETONATING
19	1	9	15							POINT-INITIATING
19	1	9	16							PROJECTILES
19	1	9	17							PROXIMITY FUZES
19	1	9	18							RADIO PROXIMITY FUZES
19	1	9	19							SELF-DESTROYING FUZES
19	1	9	20							SUPERQUICK FUZES
19	1	9	21							TAIL FUZES
19	1	9	22							TIME DELAY FUZES
19	1	10								HIGH ENERGY EXPLOSIVES
19	1	11								HIGH HEAT RESISTANT EXPLOSIVES
19	1	12								LARGE CALIBER AMMUNITION
19	1	13								MINES
19	1	13	1							ACOUSTIC MINES
19	1	13	2							AERIAL MINES
19	1	13	3							CONTROLLED MINES
19	1	13	4							INFLUENCE
19	1	13	5							LAND MINES
19	1	13	6							MAGNETIC MINES
19	1	13	7							MINE STERILIZERS
19	1	13	8							MINELAYING EQUIPMENT
19	1	13	9							PRESSURE MINES
19	1	14								PROJECTILES (AMMUNITION)
19	1	14	1							CANISTER
19	1	14	2							DEFORMATION
19	1	14	3							FLECHETTES
19	1	14	4							HIGH CAPACITY PROJECTILES
19	1	14	5							HYPERVELOCITY
19	1	14	6							ILLUMINATING PROJECTILES
19	1	14	7							INCENDIARY PROJECTILES
19	1	14	8							SUBCALIBER PROJECTILES
19	1	14	9							UNDERWATER PROJECTILES
19	1	15								PYROTECHNICS
19	1	16								SMALL CALIBER AMMUNITION
19	1	17								SMOKE AMMUNITION
19	1	17	1							COLORED SMOKE

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19	1	17	2							MUNITIONS (SMOKE)
19	1	17	3							PROJECTILES (SMOKE)
19	1	17	4							SMOKE GENERATORS
19	1	17	5							SMOKE SCREENS
19	1	18								SPECIAL APPLICATION EXPLOSIVES
19	1	19								UNDERWATER PYROTECHNICS
19	2									BOMBS
19	2	1								ANTIPERSONNEL BOMBS
19	2	2								AUXILIARY EQUIPMENT
19	2	2	1							BOMB HOISTS
19	2	2	2							CARRIERS
19	2	2	3							RACKS
19	2	2	4							SKIDS
19	2	3								BOMBLETS
19	2	4								CLUSTERS
19	2	5								COMPONENTS (BOMBS)
19	2	5								DELIVERY METHODS
19	2	5	1							BOMB CASES
19	2	5	2							BOMB FINS
19	2	6								DEPTH BOMBS
19	2	7								FIRE BOMBS
19	2	8								FRAGMENTATION BOMBS
19	2	9								GENERAL PURPOSE BOMBS
19	2	10								GUIDED BOMBS
19	2	11								HIGH EXPLOSIVE BOMBS
19	2	12								INCENDIARY BOMBS
19	2	13								RETARDATION DEVICES
19	2	14								SMOKE BOMBS
19	2	15								SUSPENSION AND RELEASE EQUIPMENT
19	2	16								TRAINING WEAPONS (BOMBS)
19	2	17								WARHEAD TECHNOLOGY (BOMBS)
19	3									COMBAT VEHICLES
19	3	1								ARMORED VEHICLES
19	3	1	1							COMPONENTS AND ACCESSORIES (ARMORED VEHICLES)
19	3	1	2							TRACK-LAYING VEHICLES
19	3	2								COMBAT VEHICLE SUSPENSION SYSTEM

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
19	3	3								ENGINEER COMBAT VEHICLES
19	3	4								FORDING AND FLOTATION AIDS
19	3	5								INFANTRY COMBAT VEHICLES (ARMORED PERSONNEL CARRIERS)
19	3	6								RECONNAISSANCE VEHICLES
19	3	7								RECOVERY VEHICLES
19	3	8								SELF-PROPELLED ARTILLERY
19	3	9								TANKS
19	3	9	1							CHASSIS
19	3	9	2							COMPONENTS AND ACCESSORIES (TANKS)
19	3	9	3							TANK TURRETS
19	4									EXPLOSIONS, BALLISTICS AND ARMOR
19	4	1								AIR-SURFACE EXPLOSIVES
19	4	2								ARMOR
19	4	2	1							AIRCRAFT ARMOR
19	4	2	2							AIRCRAFT PERSONNEL BODY ARMOR
19	4	2	3							ARMOR PLATE
19	4	2	4							BODY ARMOR
19	4	2	5							FLAK SUITS
19	4	3								EXPLOSIONS
19	4	3	1							AIR BURST
19	4	3	2							BLAST
19	4	3	3							CRATERING
19	4	3	4							DUST
19	4	3	5							FRAGMENTATION EXPLOSIONS
19	4	3	6							GASES
19	4	3	7							SURFACE BURST
19	4	3	8							UNDERGROUND EXPLOSIONS
19	4	3	9							UNDERWATER EXPLOSIONS
19	4	4								EXTERIOR BALLISTICS
19	4	4	1							BOMB TRAJECTORIES
19	4	4	2							PROJECTILE TRAJECTORIES
19	4	4	3							ROCKET TRAJECTORIES
19	4	4	4							UNDERWATER TRAJECTORIES
19	4	5								INTERIOR BALLISTICS
19	4	6								SHOCKWAVES
19	4	7								TERMINAL BALLISTICS
19	4	8								TESTING TECHNIQUES FOR EXPLOSIVES
19	4	9								UNDERWATER BALLISTICS
19	4	10								UNDERWATER EXPLOSIONS
19	5									FIRE CONTROL AND BOMBING SYSTEMS
19	5	1								BOMBING SYSTEMS

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
19	5	1	1							AREA
19	5	1	2							DIVE
19	5	1	3							HIGH-ALTITUDE BOMBING
19	5	1	4							HIGH-SPEED BOMBING
19	5	1	5							LOW-ALTITUDE
19	5	1	6							OFFSET BOMBING
19	5	1	7							PRECISION BOMBING
19	5	1	8							RADAR FIRE CONTROL SYSTEMS
19	5	1	9							SKIP BOMBING
19	5	1	10							STRATEGIC BOMBING
19	5	1	11							TACTICAL BOMBING
19	5	1	12							TOSS BOMBING
19	5	2								FIRE CONTROL COMPUTERS
19	5	2	1							BOMBING COMPUTERS
19	5	2	2							FIRE CONTROL
19	5	2	3							GUIDED MISSILE COMPUTERS
19	5	2	4							IMPACT COMPUTERS
19	5	2	5							PARALLAX
19	5	3								FIRE CONTROL SYSTEMS
19	5	3	1							AIRCRAFT FIRE CONTROL SYSTEMS
19	5	3	2							ANTIAIRCRAFT FIRE CONTROL SYSTEMS
19	5	3	3							ANTISUBMARINE FIRE CONTROL SYSTEMS
19	5	3	4							ARTILLERY FIRE CONTROL SYSTEMS
19	5	4								GUNNERY
19	5	4	1							AERIAL GUNNERY
19	5	4	2							AIMING CIRCLES
19	5	4	3							ANTIAIRCRAFT GUNNERY
19	5	4	4							DIRECTORS
19	5	4	5							LEAD ANGLE
19	5	4	6							NAVAL GUNNERY
19	5	4	7							RANGE TABLES
19	5	4	8							TARGET LEAD INDICATORS
19	5	4	9							TARGET POSITION INDICATORS
19	5	4	10							TRAINING GEAR (GUNNERY)
19	5	5								SIGHTS
19	5	5	1							BARE
19	5	5	2							BOMB SIGHTS
19	5	5	3							GUN SIGHTS
19	5	5	4							GYROSCOPIC SIGHTS
19	5	5	5							ILLUMINATION
19	5	5	6							OPTICAL SIGHTS
19	5	5	7							PERISCOPIC SIGHTS
19	5	5	8							RADAR SIGHTS
19	5	5	9							REFLEX SIGHTS
19	5	5	10							ROCKET SIGHTS
19	5	5	11							TELESCOPIC GUN SIGHTS
19	6									GUNS
19	6	1								AIRCRAFT GUNS
19	6	2								ANTIAIRCRAFT GUNS
19	6	3								ANTITANK GUNS

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
19	6	4								ARTILLERY GUNS
19	6	5								AUTOMATIC WEAPONS
19	6	5	1							ANTI-PERSONNEL WEAPONS
19	6	6								DUAL PUPOSE GUNS
19	6	7								ELECTRIC GUNS
19	6	8								GRENADE LAUNCHERS
19	6	9								GUN AUXILIARY EQUIPMENT
19	6	9	1							BARREL ATTACHMENTS
19	6	9	2							GUN TURRETS
19	6	9	3							LINK CHUTES
19	6	9	4							LOADERS
19	6	9	5							MOUNTS
19	6	9	6							ROUNDS COUNTERS
19	6	10								GUN COMPONENTS
19	6	10	1							BREECH MECHANISMS
19	6	10	2							CARTRIDGE CASE EXTRACTORS
19	6	10	3							CHARGES
19	6	10	4							FEED MECHANISMS
19	6	10	5							GUN BARRELS
19	6	10	6							GUN FIRING MECHANISMS
19	6	10	7							RECOIL MECHAMISMS
19	6	10	8							RIFLING
19	6	11								HOWITZERS
19	6	12								MORTARS
19	6	13								NAVAL GUNS
19	6	14								RECOILESS WEAPONS
19	6	15								SELF PROPELLED GUNS
19	6	16								SMALL ARMS
19	6	17								SPOTTING RIFLES
19	7									ROCKETS
19	7	1								ARTILLERY ROCKETS
19	7	2								COMPONENTS (ROCKETS)
19	7	2	1							ROCKET CASES
19	7	2	2							CLOSURE CUPS
19	7	2	3							ROCKET FINS
19	7	2	4							ROCKET HEADS
19	7	2	5							ROCKET IGNITERS
19	7	2	6							ROCKET LAUNCHERS
19	7	2	7							ROCKET NOSES
19	7	3								DUCTED ROCKETS
19	7	4								HYBRID ROCKETS
19	7	5								ROCKET LAUNCHERS

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CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
19	7	6								ROCKET WARHEADS + FUZES
19	7	6	1							ADAPTION KITS
19	7	6	2							AIRFRAME
19	7	6	3							CONTROL CABLE
19	7	6	4							FINS
19	7	6	5							IGNITION SEPARATION ASSEMBLY
19	7	6	6							IGNITER
19	7	6	7							NOSE CAP
19	7	6	8							PARACHUTE PACKAGE
19	7	6	9							ROCKET MOTOR
19	7	7								UNDERWATER ROCKETS
19	8									UNDERWATER ORDNANCE
19	8	1								DEPTH CHARGES
19	8	1	1							DEPTH CHARGE COMPONENTS
19	8	2								HYDROSTATICS
19	8	3								MINE COMPONENTS
19	8	3	1							DETECTORS
19	8	3	2							MINE BOOSTERS
19	8	3	3							MINE CASES
19	8	3	4							MINE FUZES
19	8	3	5							STERILIZERS
19	8	4								MINELAYING
19	8	4	1							MINELAYERS
19	8	4	2							MINEFIELDS
19	8	4	3							UNDERWATER MINELAYING EQUIPMENT
19	8	5								MINES
19	8	5	1							CONTACT MINES
19	8	5	2							TOWED MINES
19	8	5	3							UNDERWATER MINES
19	8	6								TORPEDO COMPONENTS
19	8	6	1							DATA PROCESSING EQUIPMENT
19	8	6	2							TORPEDO FUZES
19	8	6	3							TORPEDO LAUNCHERS
19	8	6	4							TORPEDO MOTORS
19	8	6	5							TORPEDO PROPELLANTS
19	8	6	6							TURBINES
19	8	6	7							TORPEDO WARHEADS
19	8	7								TORPEDOES
19	8	7	1							ACOUSTIC TORPEDOES
19	8	7	2							AIRCRAFT TORPEDOES
19	8	7	3							HOMING

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20										PHYSICS
20	1									ACOUSTICS
20	1	1								ACOUSTIC WAVES
20	1	2								ACOUSTIC INTENSITY
20	1	3								CHAMBERS
20	1	4								DAMPING
20	1	5								FREQUENCY (ACOUSTICS)
20	1	6								INSTRUMENTATION
20	1	7								NOISE LEVEL, AIRCRAFT AND AIRCRAFT COMPONENTS
20	1	8								PITCH
20	1	9								RESONANCE
20	1	10								SOUND PROPAGATION
20	1	11								SOUND TRANSMISSION
20	1	12								SYSTEMS STUDIES
20	1	13								ULTRASONICS
20	1	14								VIBRATORY SYSTEMS
20	2									CRYSTALLOGRAPHY
20	2	1								CRYSTALLINE FORMS PROPERTIES
20	2	2								CRYSTALLINE FORMS STRUCTURE
20	2	3								IMPURITIES
20	2	4								LATTICES
20	2	5								MAGNETISM
20	2	5	1							MAGNETIC MATERIALS
20	2	5	2							MAGNETIC FIELD RELATIONS
20	2	5	3							MAGNETOMETERS
20	3									ELECTRICITY AND MAGNETISM
20	3	1								ELECTRICAL THEORY
20	3	2								ELECTRICITY
20	3	2	1							CIRCUIT ELEMENTS
20	3	2	2							ELECTRICAL CURRENT
20	3	2	3							ELECTROMAGNETIC INDUCTION
20	3	2	4							ELECTROMAGNETIC WAVES
20	3	2	5							INSTRUMENTS AND PROBES
20	3	2	6							POTENTIAL DISTRIBUTION
20	3	3								ELECTRODYNAMICS

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CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL SYSTEMS DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
20	3	4								ELECTROSTATICS
20	3	5								MAGNETIC PHENOMENA THEORY
20	3	6								MAGNETODYNAMICS
20	4									FLUID MECHANICS
20	4	1								AERODYNAMICS
20	4	2								DYNAMICS OF FLUIDS
20	4	3								HYDRODYNAMICS
20	4	4								HYDROSTATICS
20	5									MASERS AND LASERS
20	5	1								LASERS
20	5	2								LIGHT AMPLIFICATION DEVICES
20	5	3								MASERS
20	5	4								MICROWAVE DEVICES
20	6									OPTICS
20	6	1								BOLOMETERS
20	6	2								ELECTROMAGNETIC RADIATION STUDIES (OPTICAL TO MICROWAVE REGION)
20	6	3								ELECTRON AND MICROWAVE OPTICS
20	6	4								GEOMETRICAL OPTICS
20	6	5								INFRARED RADIATION
20	6	6								INSTRUMENTATION
20	6	7								LIGHT GENERATION
20	6	8								LIGHT TRANSMISSION
20	6	9								MASS SPECTROMETRY
20	6	10								MONOCROMETERS AND SPECTROGRAPHS
20	6	11								OPTICAL IMAGING
20	6	12								PHOTOMULTIPLIERS
20	6	13								PHYSICAL OPTICS
20	6	14								RADIOMETERS
20	6	15								QUANTUM MECHANICS
20	6	15								RADIOMETRY AND PHOTOMETRY

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FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
20	6	17								REFLECTION, REFRACTION
20	6	18								ULTRAVIOLET AND X-RAYS
20	6	19								VISIBLE RADIATION
20	7									PARTICLE ACCELERATORS
20	7	1								BETATRONS
20	7	2								BEVATRONS
20	7	3								CYCLOTRONS
20	7	4								SYNCHROTRONS
20	8									PARTICLE PHYSICS
20	8	1								COSMIC RAYS
20	8	2								ELEMENTARY PARTICLES (SUBATOMIC)
20	8	3								NUCLEAR REACTIONS
20	8	4								OPTICAL EQUIPMENT
20	8	5								PHOTODETECTORS
20	8	6								PLASMA JETS
20	8	7								VAN ALLEN RADIATION
20	9									PLASMA PHYSICS
20	9	1								MAGNETOHYDRODYNAMICS
20	9	2								PINCH EFFECT
20	9	3								PLASMA OSCILLATIONS
20	9	4								PLASMA PROPERTIES
20	10									QUANTUM THEORY
20	10	1								NONRELATIVISTIC QUANTUM THEORY
20	10	2								QUANTUM MECHANICS
20	10	3								QUANTUM STATISTICS
20	10	4								RELATIVISTIC QUANTUM THEORY
20	10	5								RELATIVITY THEORY
20	11									SOLID MECHANICS
20	11	1								DYNAMIC ANALYSIS
20	11	2								DYNAMICS
20	11	2	1							BUCKLE PLATES

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20	11	2	2							COLUMNS
20	11	2	3							CORNERS
20	11	2	4							PANELS
20	11	3								ELASTIC PROPERTIES
20	11	3	1							COMPRESSION (ELASTICITY)
20	11	3	2							LOAD RATE
20	11	4								EQUILBRIUM
20	11	4	1							EQUILIBRIUM DISPLAY
20	11	4	2							FATIGUE (MATERIALS)
20	11	4	3							FREQUENCY (EQUILIBRIUM)
20	11	5								KINEMATICS
20	11	6								KINETICS
20	11	7								PLASTICITY
20	11	8								RELATIVISTIC DYNAMICS
20	11	9								SHOCK
20	11	9	1							IMPACT SHOCK
20	11	9	2							INTERVAL
20	11	9	3							SPECTRA
20	11	9	4							WAVE FORMS
20	11	10								STRESS ANALYSIS
20	11	10	1							ENERGY-TO-BREAK
20	11	10	2							STRESS RECOVERY
20	11	10	3							STRESS STRAIN DIAGRAMS
20	11	11								STRUCTURAL MECHANICS
20	12									SOLID STATE PHYSICS
20	12	1								CRYOGENIC MATERIAL PROPERTIES
20	12	2								CRYOGENIC TEMPERATURES
20	12	3								CRYOSARS
20	12	4								SEMICONDUCTOR FUNDAMENTALS
20	12	5								SEMICONDUCTORS (MATERIALS)
20	12	6								STRUCTURE AND PROPERTIES OF SOLIDS (EXCEPT CRYSTALS AND METALS)
20	12	7								THIN FILM MICROELECTRONIC
20	13									THERMODYNAMICS
20	13	1								BLACKBODY RADIATION
20	13	2								CRYOGENICS, CRYOSTATS, CRYOPUMPING
20	13	3								CRYOGENIC PHENOMENA
20	13	4								CRYOGENICS

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20	13	5									EQUATIONS OF STATE
20	13	6									FREE ENERGY, ENTHALPY, ENTROPY
20	13	7									HEAT TRANSFER
20	13	8									KINETIC THEORY
20	13	9									LOW TEMPERATURE PHENOMENA
20	13	10									THERMAL ABSORPTANCE AND TRANSMISSION
20	13	11									THERMAL RADIATION
20	13	12									THERMAL REFLECTANCE
20	13	13									THERMODYNAMIC THEORY
20	14										WAVE PROPAGATION
20	14	1									GENERATION (WAVE PROPAGATION)
20	14	2									INFRARED
20	14	3									INFRARED OPTICAL DETECTION
20	14	4									MICROWAVE OPTICS
20	14	5									MODULATION (RADIOFREQUENCY WAVES)
20	14	6									RADIO FREQUENCY SPECTROSCOPY
20	14	7									RADIOFREQUENCY PROPAGATION
20	14	8									SCATTER PROPAGATION
20	14	9									SHOCK WAVE PROPAGATION IN SOILS AND ROCK
20	14	10									SOUND
20	14	11									ULTRA-VIOLET
20	14	12									VHF
20	14	13									VIBRATION AND SHOCK
20	14	14									WAVE PROPAGATION
20	14	15									X-RAY

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21										PROPULSION AND FUELS
21	1									AIR-BREATHING ENGINES
21	1	1								LIQUID AIR CYCLE ENGINES
21	2									COMBUSTION AND IGNITION
21	2	1								AUTOIGNITION
21	2	2								COMBUSTION
21	2	3								COMBUSTION PRODUCT STUDIES
21	2	4								COMBUSTION SYSTEMS
21	2	5								COMPRESSION IGNITION
21	2	6								CONTINUOUS COMBUSTION
21	2	7								DISTRIBUTORS
21	2	8								ENGINE IGNITERS
21	2	9								EXTERNAL IGNITION
21	2	10								FLAME STABILITY
21	2	11								IGNITION
21	2	12								INTERMITTENT COMBUSTION
21	2	13								SPARK PLUGS
21	2	14								STARTERS (IGNITION)
21	2	15								SUPERSONIC COMBUSTION
21	2	15	1							EXPERIMENTAL
21	2	15	2							THEORETICAL
21	3									ELECTRIC PROPULSION
21	3	1								ARC JET ENGINES
21	3	2								ELECTRICAL ENGINES
21	3	3								ION ENGINES
21	3	4								PLASMA SYSTEMS
21	3	5								RESISTO-JET ENGINES
21	4									FUELS
21	4	1								COMPRESSIBLE FLUID FLOW
21	4	2								EXOTIC FUELS
21	4	3								FUEL HANDLING AND STORAGE

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21	4	4									FUEL PERFORMANCE
21	4	5									FUEL PRODUCTION
21	4	6									FUEL STORAGE
21	4	7									GASEOUS FUELS
21	4	8									HYDROCARBON FUELS
21	4	9									LIQUID FUELS
21	4	10									SOLID FUELS
21	5										JET AND GAS TURBINE ENGINES
21	5	1									AIRCRAFT ENGINES
21	5	2									COMBUSTION SYSTEM EQUIPMENT
21	5	3									COMPRESSORS AND TURBINES
21	5	4									CONTROL EQUIPMENT (ENGINES)
21	5	5									ENGINE TEST CELLS
21	5	6									FUEL AND LUBRICATION SYSTEMS
21	5	7									GAS TURBINE ENGINES
21	5	8									HYDRODUCTS
21	5	9									HYDROJET ENGINES
21	5	10									INDUCTION AND EXHAUST SYSTEMS
21	5	11									JET ENGINES
21	5	12									RAMJET ENGINES AND AFTERBURNERS
21	5	13									REGENERATORS
21	5	14									TURBOJET ENGINES
21	5	15									TURBOPROP ENGINES
21	5	16									TURBOSHAFT ENGINES
21	5	17									TURBOSUPERCHARGERS AND POWER RECOVERY TURBINES
21	6										NUCLEAR PROPULSION
21	6	1									AIR DEVICES
21	6	2									AIRCRAFT NUCLEAR PROPULSION
21	6	3									COMPONENTS AND ACCESSORIES (NUCLEAR ENGINES)
21	6	4									CONTROL (NUCLEAR PROPULSION)
21	6	5									COOLING (NUCLEAR PROPULSION)

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21	6	6								ENGINE DESIGN (NUCLEAR)
21	6	7								FUELS (NUCLEAR)
21	6	8								GROUND DEVICES
21	6	9								INSTALLATION
21	6	10								LAUNCH SYSTEM PROPULSION
21	6	11								MARINE DEVICES
21	6	12								MARINE PROPULSION SYSTEMS
21	6	13								MATERIALS (NUCLEAR PROPULSION)
21	6	14								PERFORMANCE AND OPERATION (NUCLEAR ENGINES)
21	6	15								SPACE PROPULSION
21	6	16								SHIELDING (NUCLEAR PROPULSION)
21	7									RECIPROCATING ENGINES
21	7	1								AIR CLEANERS
21	7	2								COMPRESSION IGNITION ENGINES
21	7	3								DIESEL ENGINES
21	7	4								ENGINE ELECTRICAL EQUIPMENT
21	7	5								FREE PISTON ENGINES
21	7	6								FUEL AND LUBRICATION SYSTEMS
21	7	7								FUEL INJECTORS
21	7	8								FUEL SYSTEMS
21	7	9								HYBRID ENGINES
21	7	10								INDUCTION AND EXHAUST SYSTEMS
21	7	11								INTERNAL COMBUSTION ENGINES
21	7	12								OTHER ENGINES
21	7	13								POWER AND DRIVE SYSTEMS
21	7	14								SPARK IGNITION ENGINES
21	7	15								STARTERS (ENGINES)
21	7	16								STEAM ENGINES
21	7	17								VAPOR CYCLE ENGINES
21	8									ROCKET MOTORS AND ENGINES

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL SYSTEMS DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
21	8	1								COMBUSTION CHAMBERS
21	8	2								INJECTORS
21	8	3								JET ASSISTED TAKE OFF (JATO)
21	8	4								LIQUID ROCKET MOTORS
21	8	4	1							AIR AUGMENTATION
21	8	4	2							COOLED UNCOOLED NOZZLES
21	8	4	3							FITTINGS
21	8	4	4							HAZARD PROTECTION
21	8	4	5							INJECTORS
21	8	4	6							PRESSURIZATION SYSTEMS
21	8	4	7							PUMPS
21	8	4	8							TANKAGE
21	8	4	9							THRUST CHAMBERS
21	8	4	10							THRUST VECTOR CONTROL SYSTEMS
21	8	4	11							VALVES AND REGULATORS
21	8	5								NOZZLES
21	8	6								PROPELLANT FEED SYSTEMS
21	8	7								PROPULSION HARDWARE
21	8	8								ROCKET ENGINE TANKS
21	8	9								ROCKET MOTOR TEST CELLS
21	8	9	1							ALTITUDE SIMULATION
21	8	9	7							THRUST MEASUREMENT
21	8	10								ROCKET MOTORS AND NOZZLES
21	8	11								SOLID ROCKET MOTORS
21	8	11	1							AIR AUGMENTATION
21	8	11	2							CASES
21	8	11	3							COMBUSTION
21	8	11	4							HAZARDS
21	8	11	5							IGNITION
21	8	11	6							INSPECTION
21	8	11	7							LAUNCHS FLIGHT PROBLEMS
21	8	11	8							LINER BOND SYSTEMS
21	8	11	9							MANDRIL
21	8	11	10							MECHANICAL BEHAVIOR
21	8	11	11							MOTOR DESIGN
21	8	11	12							NOZZLES
21	8	11	13							STRUCTURES
21	8	11	14							THERMAL PROTECTION
21	9									ROCKET PROPELLANTS
21	9	1								ADDITIVES
21	9	2								AGE ROCKET PROPULSION
21	9	3								CHEMICAL PROPELLANT PERFORMANCE
21	9	4								CHEMICAL PROPELLANT PRODUCTION
21	9	5								CHEMICAL PROPELLANT STORAGE AND HANDLING

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
21	9	6								CHEMICAL REACTION KINETICS
21	9	7								COMBUSTION TECHNOLOGY
21	9	8								HYBRID PROPELLANTS
21	9	9								LIQUID ROCKET PROPELLANTS
21	9	9	1							BINDERS (ROCKET PROPELLENTS)
21	9	9	2							CRYOGENICS
21	9	9	3							HYBRIDS
21	9	9	4							MONOPROPELLANT
21	9	9	5							OXIDIZERS, (SYNTHESIS, CHARACTERIZATION, PRODUCTION)
21	9	9	6							PLASTICIZERS (PROPELLANTS)
21	9	9	7							PROPELLANT COMBINATIONS
21	9	9	8							ROCKET FUELS (LIQUID PROPELLANTS)
21	9	9	9							STORABLE
21	9	9	10							THIXOTROPIC
21	9	10								ROCKET PROPELLANT OPERATIONS
21	9	10	1							PROPELLANT HANDLING AND STORAGE
21	9	10	2							ROCKET PROPELLANT PERFORMANCE
21	9	10	3							ROCKET PROPELLANT PRODUCTION
21	9	10	4							ROCKET PROPELLANT SAFETY
21	9	11								SOLID ROCKET PROPELLANTS
21	9	11	1							BINDERS (SYNTHESIS, CHARACTERIZATION, PRODUCTION)
21	9	11	2							FUELS (SYNTHESIS, CHARACTERIZATION, PRODUCTION)
21	9	11	3							OXIDIZERS, (SYNTHESIS, CHARACTERIZATION, PRODUCTION)
21	9	12								SOLAR PROPULSION

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH 1	EXPLORATORY DEVELOPMENT 2	ADVANCED DEVELOPMENT 3	ENGINEERING DEVELOPMENT 4	OPERATIONAL DEVELOPMENT 5	MANAGEMENT AND SUPPORT 6	SCOPE
22										SPACE TECHNOLOGY
22	1									ASTRONAUTICS
22	1	1								ENVIRONMENT SIMULATION
22	1	1	1							LOW DENSITY, HYPERVELOCITY
22	1	1	2							SOLAR SIMULATION
22	1	1	3							SPACE CHAMBERS
22	1	1	4							TEST INSTRUMENTATION
22	1	1	5							TESTING TECHNIQUES
22	1	2								OPERATIONS IN SPACE
22	1	2	1							ORBITAL RENDEZVOUS
22	1	2	2							RENDEZVOUS AND DOCKING
22	1	2	3							SPACE EXPLORATION
22	1	2	4							SPACE MAINTENANCE
22	1	3								SOLAR WIND
22	2									SPACECRAFT
22	2	1								CREW AND LIFE SUPPORT SYSTEMS
22	2	1	1							ENVIRONMENTAL CONTROL SYSTEM
22	2	1	2							HUMAN FACTORS
22	2	1	3							PORTABLE ASTRONAUT EQUIPMENT
22	2	1	4							SPACE SUITS
22	2	1	5							SUPPORTING INSTRUMENTATION
22	2	1	6							THERMAL CONTROL SYSTEM
22	2	2								FACILITIES FOR SPACECRAFT RESEARCH SUPPORT
22	2	2	1							GROUND BASED DYNAMIC SIMULATORS
22	2	2	2							EQUIPMENT CARRYING
22	2	2	3							MAN-CARRYING-SPACE
22	2	2	4							MAN-CARRYING-ASTRONAUTICS
22	2	2	5							MAN-CARRYING-LIFE SCIENCES
22	2	3								SPACECRAFT CONTROL SYSTEMS
22	2	3	1							COMMAND MODULES
22	2	3	2							CONTROL SYSTEM
22	2	3	3							CONTROL SYSTEM COMPONENT
22	2	3	4							DISPLAY DEVICES/SYSTEMS
22	2	3	5							GUIDANCE
22	2	3	6							GUIDANCE AND NAVIGATION SYSTEM
22	2	3	7							GRAVITY GRADIENT
22	2	3	8							INERTIAL GUIDANCE
22	2	3	9							POWER SYSTEMS
22	2	3	10							SEPARATION SYSTEMS
22	2	3	11							SPACECRAFT FLIGHT INSTRUMENTATION
22	2	3	12							THERMAL CONTROL
22	2	4								SPACECRAFT DAMAGE ASSESSMENT AND VULNERABILITY STUDIES
22	2	4	1							DAMAGE ASSESSMENT
22	2	4	2							VULNERABILITY STUDIES
22	2	5								SPACECRAFT DESIGN AND CONSTRUCTION
22	2	5	1							COMMUNICATION SYSTEMS
22	2	5	2							CONFIGURATION DESIGN
22	2	5	3							DYNAMIC ANALYSIS
22	2	5	4							ELECTRO-MECHAN DESIGN, INSTALL
22	2	5	5							ELECTRONIC SYSTEMS INTEGRATION

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
22	2	5	6							HEAT SHIELD DESIGN
22	2	5	7							PROPULSION SYS DESIGN, INSTALL
22	2	5	8							STRESS ANALYSIS
22	2	5	9							STRUCTURAL ANALYSIS
22	2	5	10							STRUCTURAL DESIGN
22	2	5	11							SYSTEM DESIGN AND ANALYSIS
22	2	5	12							THERMAL ANALYSIS
22	2	5	13							THERMAL DESIGN
22	2	5	14							WEIGHT CONTROL
22	2	6								SPACECRAFT GROUND SUPPORT OPERATIONS
22	2	6	1							CREW ESCAPE
22	2	6	2							ENVIRONMENTAL CONTROL
22	2	6	3							FACILITY DESIGN
22	2	6	4							GROUND MAINTENANCE
22	2	6	5							HUMAN ENGINEERING
22	2	6	6							MISSION PLANNING
22	2	6	7							SPACECRAFT STRUCTURES
22	2	7								SPACECRAFT TECHNOLOGY
22	2	7	1							ENVIRONMENTAL SIMULATION
22	2	7	2							HIGH TEMPERATURE BEARING TECHNOLO
22	2	7	3							MAGNETIC FIELDS
22	2	7	4							ORDNANCE PYROTECHNICS
22	2	7	5							POWER CONTROL
22	2	7	6							PNEUMATICS
22	2	7	7							RADIATION PROTECTION, SHIELDING
22	2	7	8							STERILIZATION
22	2	7	9							VEHICLE DYNAMICS, ALTITUDE CONTROL
22	2	7	10							VIBRATIONS + DYNAMIC RESPONSE
22	2	8								SPACE STATIONS
22	3									SPACECRAFT TRAJECTORIES AND REENTRY
22	3	1								AERODYNAMIC HEATING
22	3	2								AIRLOADS
22	3	3								ASCENT TRAJECTORIES
22	3	4								ATTITUDE ANALYSIS
22	3	5								ATTITUDE DETERMINATION
22	3	6								FLIGHT AND REENTRY SIMULATORS
22	3	6	1							RADIATION SOURCES
22	3	6	2							CONNECTIVE ARC HEATERS
22	3	6	3							RADIATION TRANSFER OPTICS
22	3	6	4							ELECTRICAL DISCHARGE EQUIPMENT
22	3	6	5							SHOCK TUBES
22	3	7								LANDING AND RECOVERY
22	3	8								ORBIT ANALYSIS
22	3	9								ORBIT DETERMINATION
22	3	10								ORBITAL MECHANICS

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	
										SCOPE
22	3	11								PLANETARY ENTRY ANALYSIS
22	3	12								REENTRY FLIGHT PATH ANALYSIS
22	3	13								SPACECRAFT INSTRUMENTATION
22	3	14								SPACECRAFT TRAJECTORY DATA
22	3	15								SPACE MECHANICS
22	3	16								STABILITY AND CONTROL
22	4									SPACECRAFT LAUNCH VEHICLES AND GROUND SUPPORT
22	4	1								ELECTRONIC GROUND SUPPORT EQUIPMENT
22	4	2								GROUND FUELING SYSTEMS
22	4	3								GROUND HANDLING MAINTENANCE
22	4	4								HANDLING AND LAUNCHING
22	4	5								LAUNCH FACILITY DESIGN
22	4	6								LAUNCH OPERATIONS
22	4	7								LAUNCHING CHECKING AND GROUND SUPPORT EQUIPMENT
22	4	8								MECHANICAL GSE
22	4	9								ORBITAL OPERATIONS

APPENDIX 3

FRANKFORD ARSENAL REPORT R-1838

VSMF

VENDOR SELECTOR QUESTIONNAIRE

In use by VSMF for obtaining data for standard
VSMF vendor selector product information.

VSMF
VENDOR SELECTOR

A. GENERAL INFORMATION

1. Full Name of Company
(Including Division or Subsidiary) (See L Page 5)

Federal Supply Code Number

2. Mailing Address Zip Code
3. Billing Address Zip Code
4. Telephone Number Area Code TWX
5. Persons to Contact:
Name Title Ext. No. Mail No.

6. Type of Ownership: (Check as appropriate)
Proprietorship Partnership Corporation (Publicly Held) Corporation (Privately Held)
State of Incorporation Date of Incorporation Years in Business
7. Type of Business: (Check as appropriate)
Manufacturer Fabricator Processor Engineering Consultant Construction
Laboratory Testing Distributor Non Profit Other
8. Owners or Officers:

Name	Title	Years with Company
	President	
	Sales Manager	
	Production Manager	
	Engineering Manager	
	Quality Manager	
	Purchasing Manager	
	Contracts Manager	

9. Persons Authorized to Sign Bids and Contracts:
Name Title Ext. No. Mail No.

10. Are you familiar with the Armed Services Procurement Regulations? Yes No
11. Are you prepared to do business in accordance with the Regulations? Yes No
*12. Classified as a Small Business Classified as a Large Business
13. General Capabilities (See K Page 5)

14. Have you performed work under U. S. Government Prime Contracts?
Yes No or Subcontracts? Yes No in the last five years?
Agency or Company Date Contract Number

15. Have you been surveyed by a Government Agency or by a Major Prime Contractor in the last year? Yes No
Government Agency or
Major Prime Contractor Date Type of Survey Purpose of Survey

B. PERSONNEL

1. Total number of Employees Direct Indirect Engineering Production
Quality Control R & D Administrative Production Control Purchasing
Other
Number of employees by shift: 1st 2nd 3rd

*Small Business Definition: Generally, a Small Business is not dominant in its field of operations and, with its affiliates, employs fewer than 500 employees.
NOTE: If in doubt, check with local Small Business Administration Office.

Company Name

C. LABOR RELATIONS

1. Do you have a Labor Union Agreement? Yes No

Name	Bargaining Agent Local Number(s)	Groups Represented	Contract Expiration Date

2. Do you have a strike agreement? Yes No Conditions

3. Strike History: Date, Duration and Reason for previous Labor Disputes:

4. Are there any wage provisions covered in existing contracts? Yes No
   Are there any wage provisions covered in pending contracts? Yes No
   What is the effectivity date?
5. Is a bonus or incentive plan in effect? Yes No Describe

D. FACILITY INFORMATION

1. Do you have a security manual which defines policy and procedures? Yes No
2. What physical capabilities do you have for safeguarding classified material?

3. Company Security Officer
   Phone Ext. Mail No.
4. Structure, Type Age
5. Total area under roof sq. ft. Engineering sq. ft.
   Production sq. ft. Administrative sq. ft. Other

   Area for Expansion sq. ft.
6. Total Property in Acres
7. Percent of Plant Area Owned Leased Lease Expires
8. Percent of Plant Area considered as a "Rent Free Facility"
9. Do you have Government Furnished Tooling in the Plant? Yes No Percent
10. Are clean-room facilities available within your plant? Yes No If yes, what class?
    to what specification?

E. MAJOR CLASSES OR TYPES OF PRODUCTION MACHINES AND EQUIPMENT AVAILABLE

F. TRANSPORTATION FACILITIES

1. Private Rail Spur? Yes No Motor Freight Docks? Yes No
   Nearest Airport
2. Major Commercial Airlines
3. Major Airfreight Lines
4. Motor Freight Lines
5. Railroads

G. QUALITY CONTROL AND TESTING

1. General
   a. Is Q.C. Dept. based on MIL-Q-9858 MIL-Q-9858A MIL-I-45208A MIL-C-45662A NASA200
   b. Do You have written Q.C. Procedures for all phases of operation? Yes No
   c. Do procedures contain Q.C. requirements for vendors? Yes No
   d. Do your purchase orders reflect these requirements? Yes No

Company Name

e. Do you perform source inspection at your vendors' facilities? Yes No
f. Are your commercial and military parts stocked separately? Yes No
g. Are all incoming parts, materials and assemblies inspected on receipt? Yes No
h. Do you control and segregate defective materials? Yes No
i. Do you evaluate cause of defective materials? Yes No
j. Do you have a system for positive corrective action? Yes No
k. Do you use inspection stamps and document materials inspected? Yes No
l. Do you maintain a Customer and Military specification file? Yes No
m. Do you have a procedure for Engineering and Contract changes? Yes No

2. Testing
   a. Do you maintain a materials testing laboratory for control of quality?
      Physical Properties Chemical Properties
   b. Do you maintain a system for tool and gage calibration? Mechanical Standards Electrical Standards
      Are they traceable to the U. S. Bureau of Standards? Mechanical Electrical
   c. Do you maintain environmental test facilities for the following? Altitude Acceleration Vibration
      Shock Humidity Sand and Dust Salt Spray Fungus Radio Interference
      Other
   d. Do you maintain facilities for functional test of parts, sub-assemblies and assemblies? Mechanical
      Electrical-electronic Hydraulic Pneumatic
   e. If you do not have facilities for the above Testing, list facilities which are available to you to perform the Testing.
      Name Address

3. Statistical Quality Control
   a. Do you practice statistical Quality Control in the following areas?
      Receiving Inspection In-Process Inspection Final Acceptance Special Processes
      Other
   b. Is Statistical Sampling performed in accordance with MIL-STD-105C?
   c. Do you have written procedures for applying sampling techniques?
4. Documentation
   a. Do you retain records of inspections and test on tooling in and out of plant?
   b. Are records maintained on Certification of Personnel? (Welding, etc., state)
   c. Are records maintained on Certification of Processes?
   d. Are records maintained on the following? Receiving Inspection Shipping Stock Room
      In-Process Inspection Measuring and Test Equipment Final Acceptance Drawing and Contract
      Changes Defective Material Control Acceptance Stamping
5. Special Test Equipment

6. Suppliers performing special processing and services such as welding, heat treating, plating, anodizing, painting, penetrant inspection, magnetic particle inspection, etc.
   Name Address Service

7. Cognizant Armed Services Agency

H. ACCOUNTING AND FINANCIAL

1. Have your Accounting Procedures been approved by an Armed Services Agency? Yes No
   Agency Date
2. Have your direct labor rates overhead G&A rates been approved?
3. Net worth of Company $

Company Name

4. Historical (3 years) and forecasted (2 years) annual sales
   19 $. 19 $. 19 $. 19 $. 19 $
5. Sales, Prime Contracts $. Subcontracts $. Commercials $
6. Present Backlog $. Covers Period . to
7. Ratio of Government to Commercial
8. Public Accountant
9. Bank

I. ADMINISTRATIVE

1. Do you use Program Evaluation Review Techniques (PERT) Yes No Other? (State)
2. Do you have Tool Design & Change Analysis?
3. Do you have a Value Engineering Program? Yes No
4. Have your Purchasing Procedures been approved by a Government Agency?
   Yes No Agency Date
5. Do you have a Small Business Program? Yes No
6. Are you capable of working under any of the following types of contracts?
   Cost Plus Fixed Fee Cost Plus Incentive Fee Time and Material Price Redeterminable
   Fixed Price Fixed Price Incentive Fee
7. Have you Procedures for Controlling, Identifying and Protecting Government Furnished Property? Yes No
8. Have you performed under a High Reliability Contract? Yes No
9. If not, do you have the capability to perform a High Reliability Contract? Yes No

J. PRODUCTS AND SERVICES

SHELF ITEMS	*N	S	ESTIMATED DELIVERY TIME

SPECIAL ITEMS	*N	S	ESTIMATED DELIVERY TIME

*Indicate normal (N) or special (S) handling by marking appropriate space.

Company Name

K. SPECIAL AREAS OF EXPERIENCE

L. NAMES BY WHICH COMPANY WAS FORMERLY KNOWN

M. AREA AND LOCAL REPRESENTATIVES

Name	Address	Contact	Phone

The information contained in this questionnaire is complete and accurate in all details to the best of my knowledge and belief.

Signature of Authorized Official Title

APPENDIX 4

FRANKFORD ARSENAL REPORT R-1838

SAMPLE KEY FRAMES

CARTRIDGE NO. 5

VSMF - QDRI

USAMC

Q·D·R·I

Qualitative Development Requirements Information File

Cartridge No. 5

September, 1966

VSMF

Produced by

Information Handling Services, Inc.

VSMF DATA CONTROL SYSTEM

QDRI FILE

* New statement to be negotiated

~~Product information pages may be copied by Lessee for internal use only~~
~~Copying any section of the index pages is expressly forbidden without permission~~
~~from Information Handling Services, Inc~~

* LINE CHANGES PROPOSED BY USAMC

APPENDIX 4

I N S T R U C T I O N S

for use of

Q D R I F I L M E D I N D E X

Each QDRI registrant's information has been separated into the following six categories for quick and easy access and retrieval:

- 1. REGISTERED ORGANIZATION VERIFICATION STATUS
  2. LATEST VALID POLICY AGREEMENT
- 3. CAPABILITIES AND FIELDS OF INTEREST — DOD R&D CAPABILITY INDEX OR EQUIVALENT
- 4. RESUMES AND PROFILES — KEY PERSONNEL
- 5. LISTINGS OF CONTRACTS — CURRENT — LAST 5 YEARS
- 6. DESCRIPTIVE CATALOG PAGES FACILITIES — EXPERIENCE — CAPABILITIES — PRODUCTS

The number appearing in each column is the beginning film frame number for that category.

P L E A S E N O T E

All six categories for a single QDRI Registrant are sequentially filmed.

- LINE CHANGES PROPOSED BY USAMC

Organizational data has been divided into the following categories →	FACILITY SECURITY STATUS	LATEST VALID POLICY AGREEMENT	DOD R&D CAPABILITY INDEX OR EQUIVALENT	RESUMES & PROFILES	LISTINGS OF CONTRACTS	DESCRIPTIVE CATALOG PAGES
COMPANY NAME	**1**	**2**	**3**	**4**	**5**	**6**
ALLIED RESEARCH ASSOCIATES INCORPORATED	100	102	105	120	192	201

APPENDIX 4

1

REGISTERED ORGANIZATION VERIFICATION STATUS

FSC CODE: 7547

FACILITY: ALLIED RESEARCH ASSOCIATES INCORPORATED
VIRGINIA ROAD
CONCORD, MASSACHUSETTS

SUBSIDIARY OF [illegible]

COORDINATOR: [illegible]
DIRECTOR OF CONTRACTS
PHONE - 617-369-9000

ORIGINAL REGISTRATION: BOSTON PROCUREMENT DISTRICT (1959)

QUALIFICATIONS UPDATED BY DD FORM 358-?, dated June 18, 1965

PRIMARY QUALIFICATION AGENCY: AMXMR US ARMY MATERIALS RESEARCH AGENCY

ADDITIONAL REGISTRATIONS:
AMSEL US ARMY ELECTRONICS COMMAND
AMCMI US ARMY MISSILE COMMAND
AMSAM US ARMY AVIATION MATERIEL COMMAND
AMSME US ARMY MOBILITY EQUIPMENT COMMAND
AMSTA US ARMY TANK AUTOMOTIVE COMMAND
AMSMU US ARMY MUNITIONS COMMAND
AMSWE US ARMY WEAPONS COMMAND
AMSTE US ARMY TEST & EVALUATION COMMAND

FSC Mfr. Code
07647

F/N 0100

[illegible]

[illegible]

13 February 1959

SUBJECT: Qualitative Development Requirements Information

TO: Commander
Army Rocket & Guided Missile Agency
Redstone Arsenal, Alabama
ATTN: [illegible]

1. We are forwarding for appropriate evaluation information from Allied Research Associates, Inc., [illegible], Boston [illegible], Mass.:

a. An official copy of Policy Agreement Form [illegible], duly executed and dated 30 October 1958 (Incl #1)

b. Designated fields of interest and capabilities (Incl #2)

c. Currently hold security clearance of "Top Secret" through Boston Air Procurement as of [illegible]

d. The designated individual qualified to receive Qualitative Development Requirements Information is:

[illegible] "Top Secret"
Address: [illegible]
Phone: [illegible]

2. This office has reviewed and evaluated all information presented and recommends this organization for receipt of QDRI in the areas checked in Inclosure #2.

FOR THE COMMANDER:

3 Incls
1. Policy Agreement
2. Fields of Int & Capability
3. Areas of R & D

[illegible]
Chief, Research & Development Branch
[illegible]

FSC Mfr. Code
07647

F/N 0101

APPENDIX 4

2

LATEST VALID POLICY AGREEMENT

FSC Mfg. Code
07647

F/N 0102

ORDNANCE CORPS
U. S. ARMY

...ENT FOR RELEASE OF QUALITATIVE DEVELOPMENT REQUIREMENTS INFORMATION

...respect to all written statements of qualitative development re-
...formation, hereafter called documents, furnished to the undersigned
by the Ordnance Corps under the terms of this agreement, it is

The documents furnished are to remain the property of the United
...ment.

The documents may be returned to the Ordnance Corps by the under-
...esired.

The Ordnance Corps may recall the documents at any time.

The documents will not be disseminated outside of recipient
without written permission of the Ordnance Corps, Department of

The undersigned shall safeguard all classified documents and
... and maintain a system of security controls within its organization
... with the requirements of (1) The Department of Defense Security
... Form 441 (1 May 54), (2) the Armed Forces Industrial Security
... 380-130), dated 21 September 1956, and (3) any revisions of the
...quired by the demands of national security as determined by the

The documents furnished are not to be construed as a request for
a commitment on the part of the Government that a contract may be
request that the undersigned incur expenses in anticipation of a
...ntract, nor shall they be used as a basis of a claim against the
The furnishing of these documents by the Government shall in no
...ued to obligate the undersigned to furnish to the Government any
...developmental, research, or production articles, or proposals there-

The documents are furnished to assist the undersigned organiza-
...ating where that organization may most logically seek active pr...
... the Ordnance R&D Activity.

With respect to each document or related group of documents re-
... the terms of this agreement, the undersigned organization will
Ordnance Corps with a report, within 90 days after receipt of such
... indicate whether the organization believes it can assist in
...in specific qualitative requirements. This report may include any
...questions, ideas, or recommendations which the organization desires

07647

F/N 0103

...ys are required for the organization to complete its
...in documents, notice to the Ordnance Corps of the additional
permit the organization to delay submission of this report.

...rstood that if, as a result of receiving Qualitative Develop-
...formation under the terms of this agreement, the undersigned
...generate ideas and information which become the subject of an
...ract to reduce such ideas to practice and/or verify same
...on, the undersigned organization will be required under such
...he Government a royalty free right to use such ideas and/or
...use such generated information.

...gnized that the Ordnance Corps may currently be utilizing
...and those of certain contractors to obtain solutions to the
...velopment requirements which are furnished to this and other
...ters of information, and that any ideas which may be generated
... in response to the qualitative development requirements inform-
... the terms of this agreement, and which this organization may
...ance Corps, will necessarily have to be evaluated by the Ordnance
... with the ideas or results obtained from other sources.

...ance of such qualitative development requirements information
...under the terms of this agreement, and the possible develop-
...osals which may be proffered to the Ordnance Corps by this
...tutes a voluntary participation by this organization in the
... - Industry team effort to effect the greatest feasible rate
...evelopment of new and better Ordnance weapons and material.

...her agreed that either the undersigned organization or the
... Army, may terminate this agreement at any time by giving
...ten notice of intent to terminate 30 days prior to effective

Signature *Lawrence Levy*

...553

Name and Title Lawrence Levy, President

...igner by initialing and filling in the blanks, if any, of the
... statement:

____

...e partnership known as ______________________

______________ and have authority to bind the said partner-
... this agreement.

...representative of the corporation (or the organizational
..., or separate facility thereof if this agreement is limited
...ment of the corporation) known as ______________

...rch Associates, Inc. *L.L.*

... bind the indicated organization with respect to this agree-

FSC Mfg. Code
07647

F/N 0104

APPENDIX 4

3

CAPABILITIES AND
FIELDS OF INTEREST –
DOD R&D CAPABILITY
INDEX OR EQUIVALENT

07647

F/N 0105

DEPARTMENT OF DEFENSE
RESEARCH AND DEVELOPMENT AGENCY [illegible]

June 18, 19[illegible]

INSTRUCTIONS AND DEFINITIONS

[illegible]

APPLICANT TO COMPLETE THE FOLLOWING

Allied Research Associates, Inc.
Virginia Road, Concord, Mass.

Delaware

110 — 30

30

ARACON Geophysics Co., a division of Allied Research Associates, Inc.
Virginia Road, Concord, Mass.

PERSONS TO CONTACT ON MATTERS [illegible]

NAME	TITLE	TELEPHONE NO.	CITY AND STATE
Norman P. Singer	Director of Contracts	369-9000	Concord, Mass.

NAMES OF OFFICERS, MEMBERS OF OWNERS OF CONCERN, PARTNERSHIP, ETC.

PRESIDENT: Lawrence Levy	VICE PRESIDENT: Dr. George Gerard, and Dr. Arnold Glaser
SECRETARY: Lewis Weinstein	TREASURER: Norman Buchbinder

FACILITY SECURITY CLEARANCE

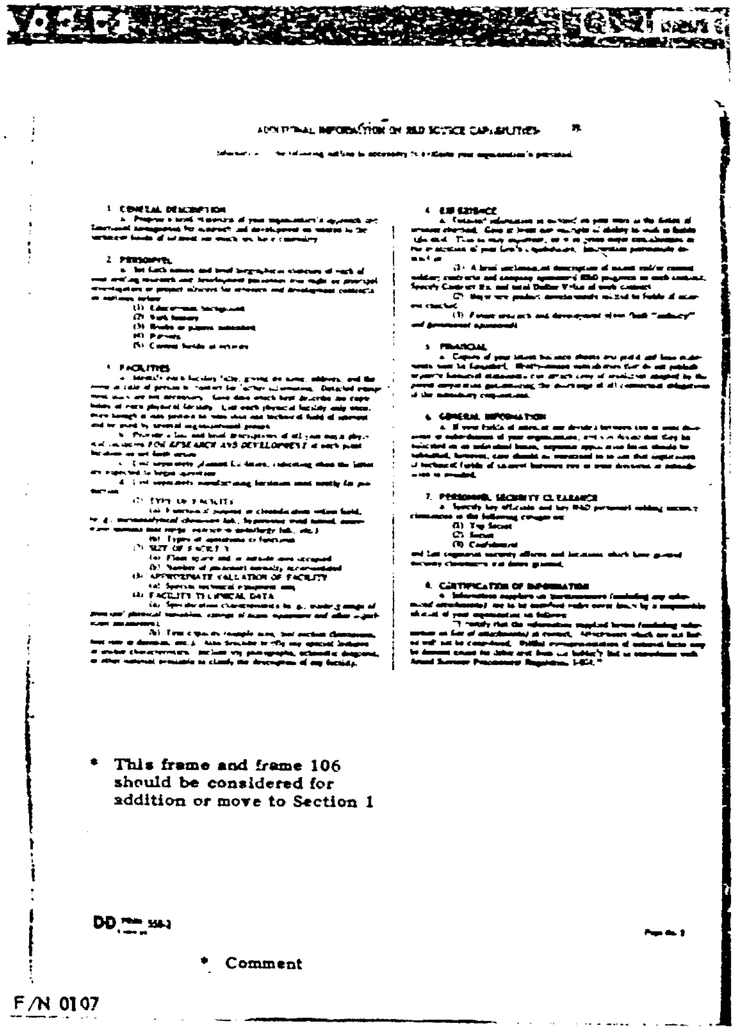
DISCO, Columbus Ohio

Director of Contracts

0764[illegible]

F/N 0106

APPENDIX 4


ADDITIONAL INFORMATION ON R&D SCIENCE CAPABILITIES

1. GENERAL DESCRIPTION

2. PERSONNEL

3. FACILITIES

4. EXPERIENCE

5. FINANCIAL

6. GENERAL INFORMATION

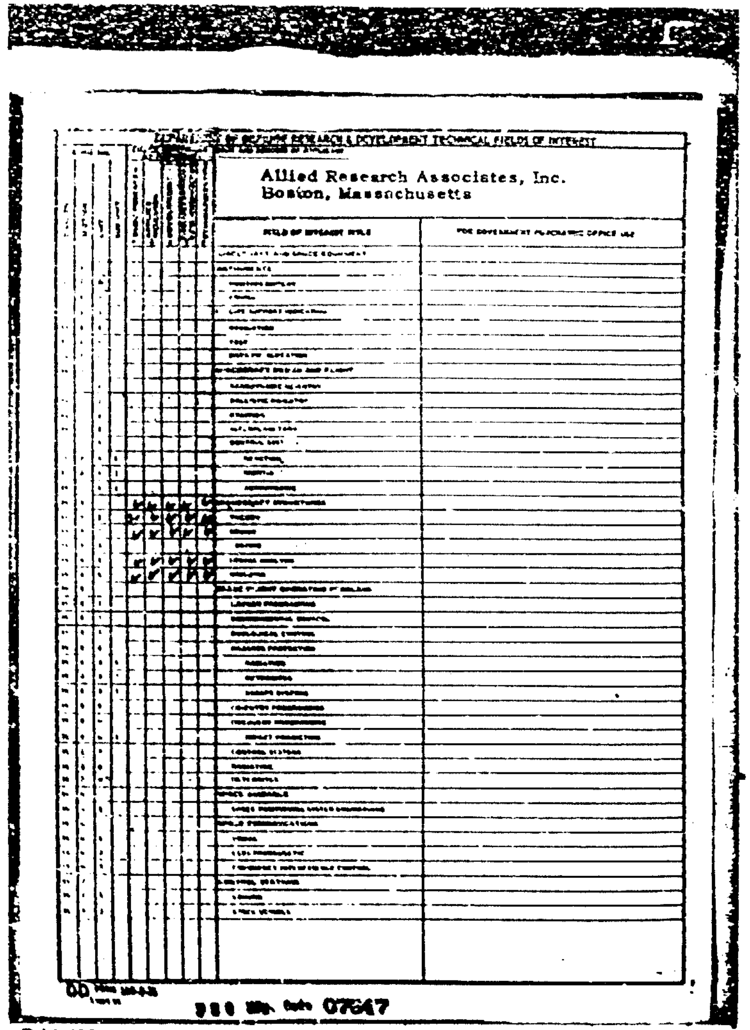
7. PERSONNEL SECURITY CLEARANCE

8. CERTIFICATION OF INFORMATION

* This frame and frame 106 should be considered for addition or move to Section 1

* Comment

F/N 0107


DEPARTMENT OF DEFENSE RESEARCH & DEVELOPMENT TECHNICAL FIELDS OF INTEREST

Allied Research Associates, Inc.
Boston, Massachusetts

FIELD OF RESEARCH TITLE | FOR GOVERNMENT PURCHASING OFFICE USE

07647

F/N 0119

APPENDIX 4

4

RESUMES AND PROFILES – KEY PERSONNEL

F/N 0120

988 Mfr. Code 07647

ALLIED RESEARCH ASSOCIATES, INC. — BOSTON 35, MASSACHUSETTS

ADMINISTRATIVE MANAGEMENT

Accounting and Contracts	Mr. William F. Burke
Assistant to the President	Mr. Leonard P. Grady
Development Planning	Mr. Alfred R. Saville
Personnel	Mr. Gustave L. Oppermann
Purchasing	Mr. Martin D. Granville
Washington Office	Mr. Robert E. Jermon

* NOT GENERALLY DESIRED

* Comment

F/N 0121

988 Mfg. Code 07647

APPENDIX 4

ALLIED RESEARCH ASSOCIATES, INC. — BOSTON 10, MASSACHUSETTS

MR. WILLIAM F. BURKE

MANAGER, ACCOUNTING AND CONTRACTS

Mr William F Burke, Manager and Comptroller of Allied Research, has administrative responsibility for all contractual and accounting activities. He is a graduate of the Bentley School of Accounting and Finance and holds the degree of Bachelor of Business Administration from Northeastern University. In addition, Mr Burke is a graduate of the United States Air Force Pilot and Bombardier Schools. He served in the Eighth Air Force during World War II, and was awarded the Distinguished Flying Cross and Air Medal. Mr. Burke has been in the field of accounting and contract administration for the past eleven years. As an accountant and auditor for the Massachusetts Institute of Technology, he performed field overhead studies and negotiated overhead rates with subcontractors performing work for the Massachusetts Institute of Technology under government prime contracts. In conjunction with these studies, he performed the audit of Direct Charges as applied to the various subcontracts. In addition, he performed surveys of prospective subcontractors with reference to their financial and administrative capabilities. Later, Mr Burke was appointed Contract Administrator of all subcontracts at the Lincoln Laboratory of the Massachusetts Institute of Technology. Mr Burke terminated his association with the Massachusetts Institute of Technology in May of 1954 to become Assistant to the Comptroller at Allied Research Associates, Inc., and was subsequently promoted to Comptroller

* NOT GENERALLY DESIRED

* Comment

F/N0122

ALLIED RESEARCH ASSOCIATES, INC. — BOSTON 10, MASSACHUSETTS

LEONARD P. GRADY

ASSISTANT TO THE PRESIDENT

Mr. Leonard P. Grady, Assistant to the President, has the primary responsibility of assisting the President of Allied Research Associates, Inc., by performing necessary staff work in technical and administrative areas. These duties are, in general, quite varied but are consistent with the normal function of the Office of the President. Some of these activities include preparation of preliminary planning reports; preparation of briefing material for Board of Directors' meetings; coordination of Company activities in professional society meetings and technical conventions; and coordination of in-house reports on the progress of current research and development programs in the Company.

Prior to his appointment to this position, Mr. Grady participated as a Staff Engineer in several varied studies at Allied Research, including two programs of a research and development nature for the U. S. Air Force--one was concerned with the design, wind tunnel tests, flight tests and analysis of a two-stage parachute system for a wind-measuring missile, and one with vulnerability of various aircraft which are subjected to the effects of a nuclear explosion. His other work included the analysis of a stabilization gyro for a small glider and the design of a number of missile recovery systems.

Mr. Grady was graduated from Boston College with the degree of Bachelor of Sciences in Physics. As a graduate student he has pursued advanced studies in physics at the University of Delaware and presently is a member of the physics graduate program at Northeastern University.

After graduation from Boston College, Mr. Grady joined the Ballistic Research Laboratories at Aberdeen Proving Grounds as a Physicist. In this capacity he worked in the Shock Tube Section and conducted programs concerned with the thermal and blast effects on plexiglass and models of bombproof shelters. His measurement of the emission of shock waves from the open end of a cylindrical tube resulted in establishing a simulation of certain aspects of a free-air explosion. Following this, Mr. Grady was employed by Melpar, Inc., of Falls Church Virginia, where he became a Senior Engineer in the Flight Simulator Division. In this position, he directed the analysis and translation of the F-100, F101B and A3D aircraft manufacturers' flight and system data into electromechanical form for simulated fabrication. This involved the synthesis of the equations of motion for each aircraft and the design of systems to simulate the Radar, Radio Aids, Flight Control and Engine of the respective aircraft.

Mr. Grady is a Member of the Institute of the Aeronautical Sciences, the American Physical Society and the American Institute of Physics.

F/N 0123

APPENDIX 4

ALLIED RESEARCH ASSOCIATES, INC. — BOSTON 10, MASSACHUSETTS

DR. PHILIP GOODMAN

Dr. Philip Goodman, Senior Scientist, is a member of the staff of the Materials Department and is presently engaged in studies of the relationship between time-dependent mechanical properties of materials and their molecular structure. These studies include both relaxation phenomena and steady-state flow behavior of ceramics and semi-crystalline systems. Other related or subsidiary areas of activity are concerned with the temperature dependence of dynamic moduli and with the behavior of highly reactive, high temperature, molecular species.

Dr. Goodman received a Bachelor of Arts Degree from New York University in 1943. After serving with the Air Force during World War II, during part of which time he was an instructor in Chemistry, he attended the University of Chicago where he received a Master of Science degree. Subsequent academic training was undertaken at the Ohio State University where he held several research fellowships as well as teaching assistantships. His thesis was concerned with the structure of polyelectrolyte molecules in solution. A Doctor of Philosophy degree in physical chemistry was awarded in 1952.

Upon graduation, Dr. Goodman joined the staff of the National Bureau of Standards where he was a project leader doing research on the rheological properties, molecular structure and kinetics of mechanical degradation of synthetic rubbers and aluminum soap gels. He later moved to the Laboratory of the U. S. Naval Powder Factory where he was head of the Structure and Properties Section. His research interests were concerned with the relationship of molecular structure and semi-crystallinity to relaxation processes and flow behavior of cellulose esters.

In 1956, Dr. Goodman joined the Corning Glass Works where he supervised a group and performed research concerned with a wide variety of properties of silicate glasses and glass-ceramics. These included studies of viscoelastic behavior of glasses in their transition regions, viscous properties of glasses at high temperatures, solid-state physics studies of nucleation and growth, phase transformations occurring in semi-crystalline glasses and influences of crystalline inclusions upon the physical properties of an amorphous system.

Dr. Goodman has published several technical papers and, during his tenure at Corning Glass Works, lectured to several local sections of scientific societies. He is a member of the American Chemical Society, American Physical Society, Society of Rheology and American Association for the Advancement of Science.

* MOST ACCEPTABLE

* Comment

F/N 0191 — F.S.C. Mfr. Code 37117

APPENDIX 4

5

LISTINGS OF CONTRACTS – CURRENT – LAST 5 YEARS

F/N 0192 — F S C Mfg. Code 07647

ALLIED RESEARCH ASSOCIATES, INC. — BOSTON 15, MASSACHUSETTS

Contract Description	Year Awarded	Client
Turboprop airliner evaluations	1955	American Airlines
Development of a liquid analog of the atmosphere	1955	Air Force Research Division, Geophysics Research Directorate
Evaluation of the Burnelli CBY-3 aircraft	1955	Air Trends, Incorporated
Vibration isolation system for Skipper	1955	Massachusetts Institute of Technology, Instrumentation Laboratory
LABS delivery studies	1955	Wright Air Development Division, Weapons Guidance Laboratory
Analysis, design, development and testing of very fast response bolometer to measure thermal radiation	1955	Air Force Research Division, Geophysics Research Directorate
Heat transfer problem	1955	Cambridge Corporation
Specialized studies in the utilization of high energy fuels for long range aircraft	1955	Cambridge Corporation
Vibrations analysis of 5 liter Dewar flask	1956	Cambridge Corporation
Development of vibration isolation system for Thor guidance equipment	1956	AC Spark Plug
Fabrication of Spire vibration isolators (4)	1956	Massachusetts Institute of Technology, Instrumentation Laboratory
Shock and vibration analysis of 15 gallon Dewar flask	1956	Cambridge Corporation
Design and development of expendable wind measuring missiles (Wind-Sonde System)	1956	Wright Air Development Division, Aerial Reconnaissance Laboratory
Dynamic analysis of TV tower	1956	Magnesium Products of Milwaukee
Development and fabrication of a radiation monitoring system	1956	Yankee Atomic Electric Company

F/N 0194 — F S C Mfg. Code 07647

APPENDIX 4

ALLIED RESEARCH ASSOCIATES, INC. — BOSTON 10, MASSACHUSETTS

Contract Description	Year Awarded	Client
Nose cone vulnerability studies	1956	General Electric
Mechanical design of special devices	1956	Air Force Research Division, Geophysics Research Directorate
Vibration testing and design modification of 5 liter Dewar flask	1956	Cambridge Corporation
Turboprop airliner evaluations	1956	Southwest Airways
Special instrumentation studies for re-entry bodies	1956	General Electric Company
Formulation of structural design criteria for Air Force missiles	1957	Wright Air Development Division, Aircraft Laboratory
Weapons effects studies on aircraft including participation in full scale field tests at the Nevada and Pacific Proving Grounds; capability and feasibility of various types of Air Force aircraft as carriers for nuclear weapons; vulnerability analyses of various representative targets to atomic warheads supplemented by full scale laboratory test program.	1957	Wright Air Development Division, Aircraft Laboratory
Plastic scintillator fabrication	1957	Edgerton, Germeshausen and Grier, Inc.
Thor isolator fabrication	1957	AC Spark Plug
Plastic scintillator fabrication	1957	University of California Radiation Laboratory
Vibration isolation and structural dynamic analysis of Astro-Tracker with objective of reducing excessive loads.	1957	Kollsman Instrument Corporation
Studies of employment of nuclear weapons in air defense	1957	Air Force Special Center Analysis Division of Research Directorate
Analytical studies of hydrodynamics of water-exit missiles with emphasis on turbulence effects	1957	Office of Naval Research

F/N 0195

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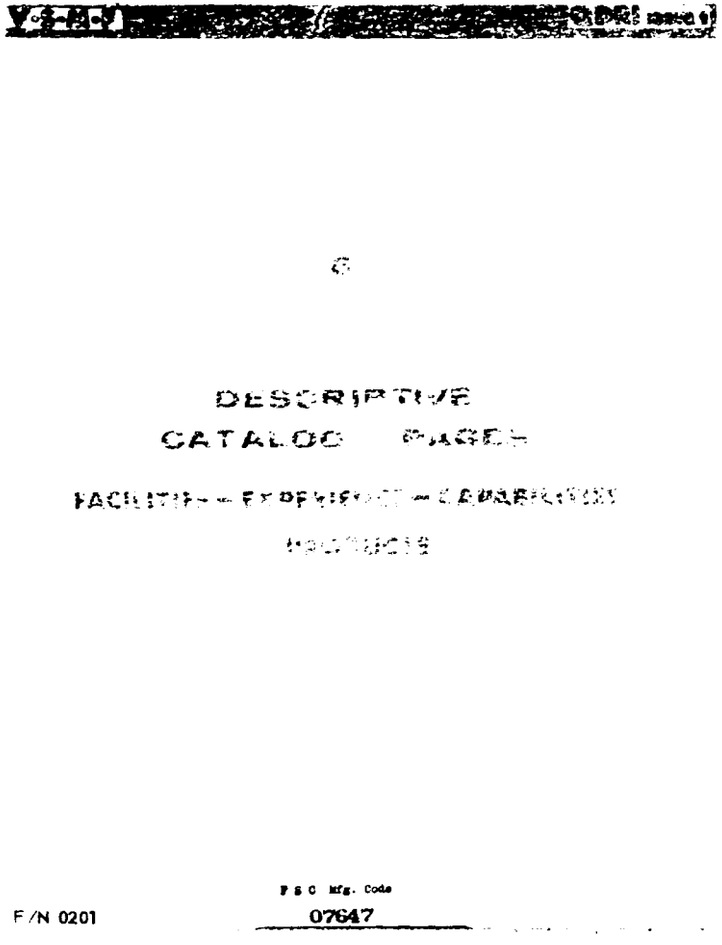
ALLIED RESEARCH ASSOCIATES, INC. — BOSTON 10, MASSACHUSETTS

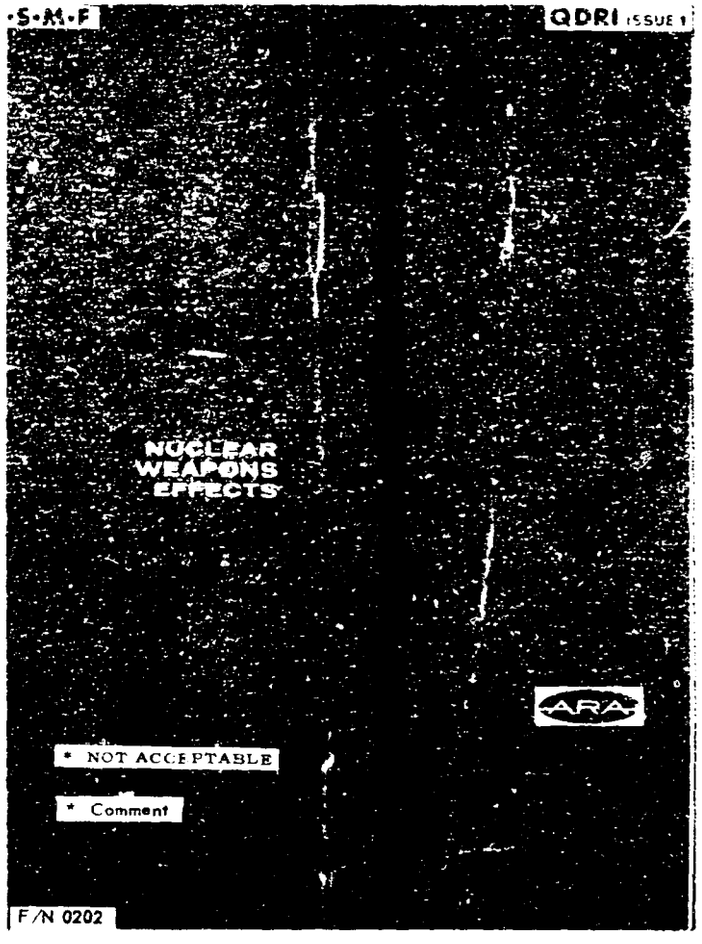
Contract Description	Year Awarded	Client
Manufacture of plastic fluors	1960	Edgerton, Germeshausen and Grier, Incorporated
Research in methods of analysis for heat conduction and convection	1959	Air Force Office of Scientific Research
Design, development and fabrication of Vibraplanes	1960	MB Electronics
Velocity measuring system study	1960	Holloman Air Force Missile Development Center
Vanguard II satellite analysis	1960	National Aeronautics and Space Agency
Study of recognition and identification techniques	1960	Rome Air Development Center
Grinder Evaluation	1960	Bird-Johnson Company
Vulnerability of satellite system	1960	Wright Air Development Division
Hydromagnetic Shock study	1960	Air Force Special Weapons Center
Plasma simulation experiment	1960	Air Force Special Weapons Center

F/N 0200

P & C Mfg. Code
07647

APPENDIX 4


DESCRIPTIVE
CATALOG
F/N 0201
F S C Mfg. Code
07647


·S·M·F
QDRI ISSUE 1
NUCLEAR
WEAPONS
EFFECTS
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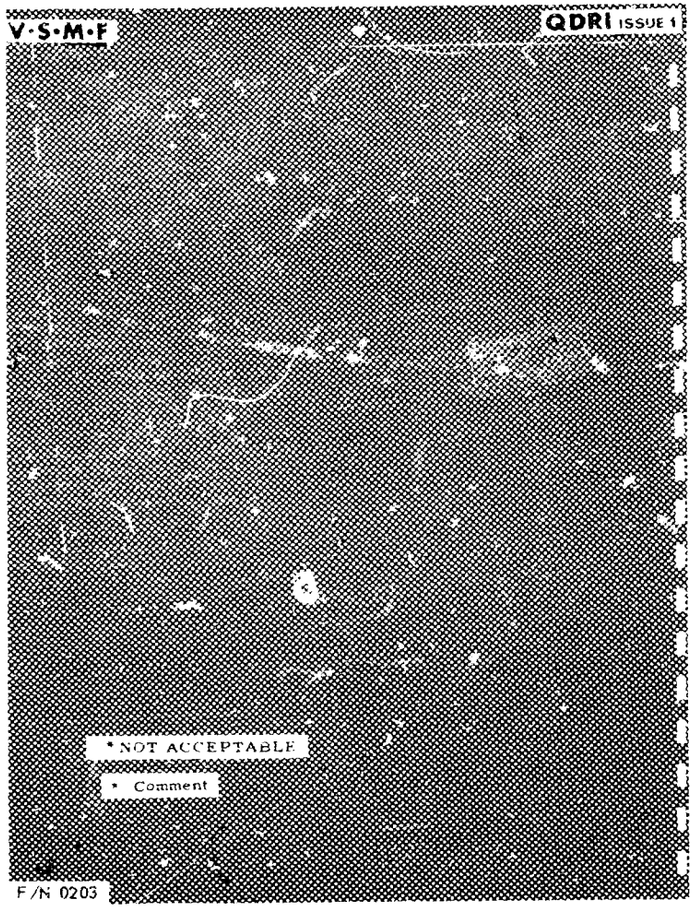
* NOT ACCEPTABLE
* Comment
F/N 0202

APPENDIX 4



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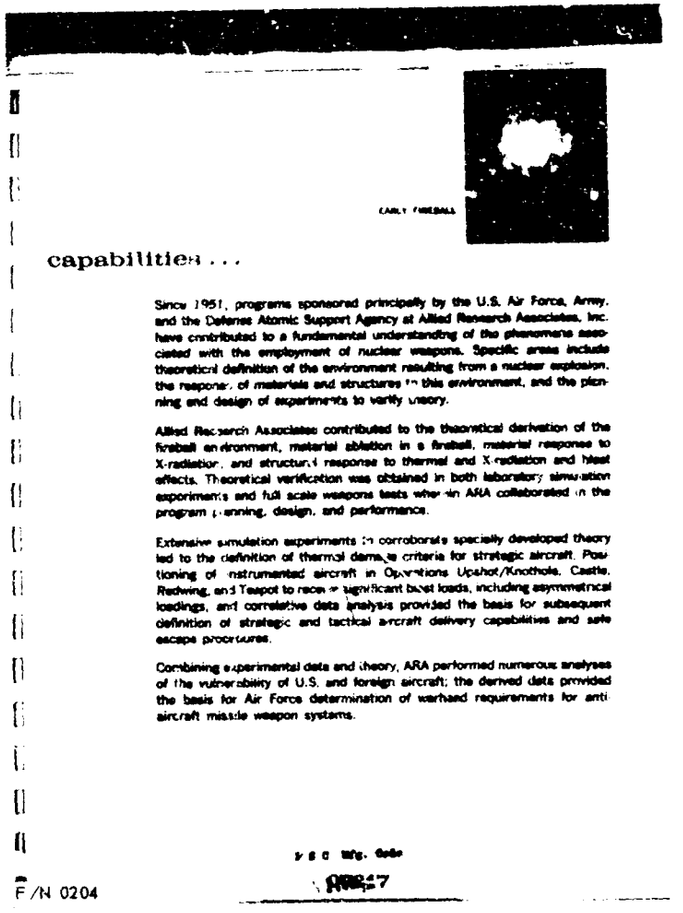
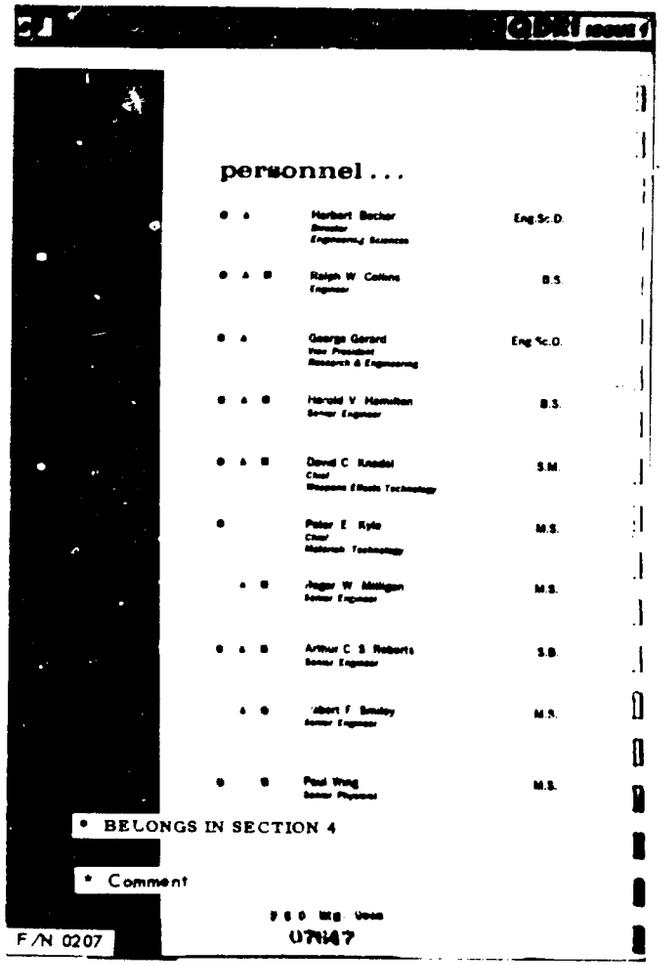
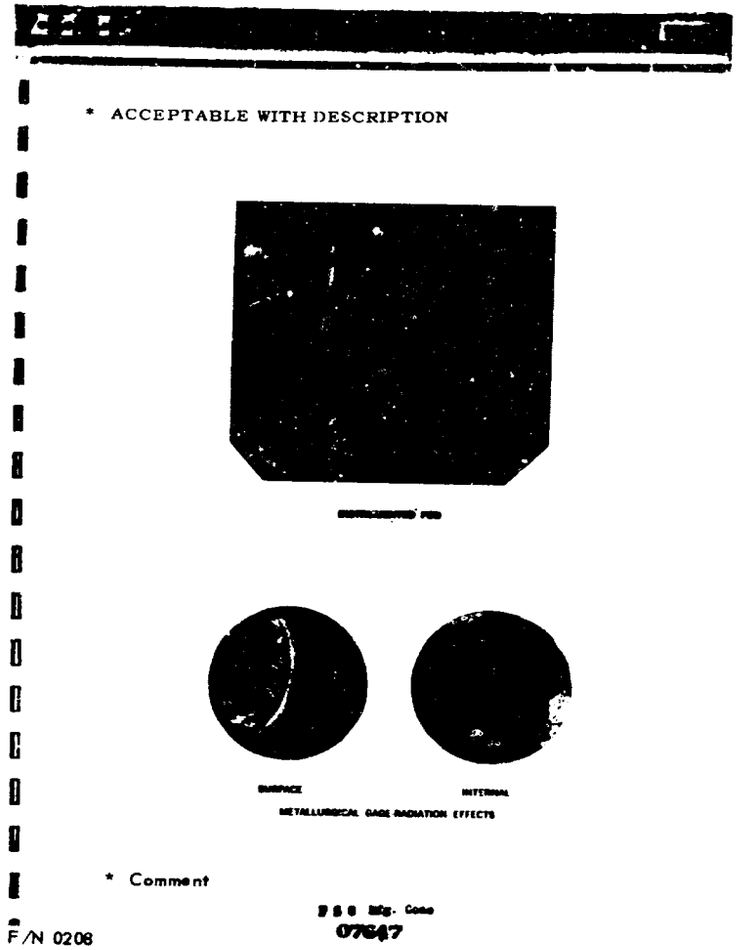


F/N 0204

APPENDIX 4


personnel . . .
Herbert Becker
Eng.Sc.D.
Ralph W. Collins
B.S.
George Gerard
Eng.Sc.D.
Harold V. Hamilton
B.S.
David C. Randal
S.M.
Peter E. Kyle
M.S.
Roger W. Milligan
M.S.
Arthur C. S. Roberts
S.B.
Albert F. Smiley
M.S.
Paul Vrag
M.S.
* BELONGS IN SECTION 4
* Comment
F/N 0207
07647


* ACCEPTABLE WITH DESCRIPTION
SURFACE
INTERNAL
METALLURGICAL GAGE RADIATION EFFECTS
* Comment
F/N 0208
07647

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strobelasticity.....

STROBELASTICITY is the extension of stroboscopic lighting to a transient photoelastic event which can be repeated periodically, analogous to the manner in which strobe lighting is used to "stop" periodic motion such as rotation of a shaft or oscillation of a piston. In each case, a short duration flash illuminates an instant in a cycle of a repeated event. In SE the repeated event is an impact stress wave which is generated, propagates, and finally decays within the period of repetition of the event. The illumination reveals the character of the transient photoelastic fringe pattern at the instant of the flash.

Except for the fact that a repeated transient event is being viewed directly, there is no essential difference in illumination principle between SE and stroboscopic analysis of rotating machinery. Frequency matching of strobe and impact produces a still picture at any chosen phase difference, while slight differences in frequency permit visualization of the event at a considerably reduced speed, the time scale of which is hypothetically capable of infinite resolution. Figures 1 through 5 reveal sequences of views obtained in representative photoelastic models during propagation of impact stress waves.

SE provides considerable simplification in equipment over other dynamic photoelastic procedures, which utilize high speed cameras and special light sources and which require the use of photography because they do not provide the image visualization available with SE. Furthermore, fringe sharpness is frequently lost, and the exposure intervals may be too large to obtain continuous visualization of the moving wave thereby requiring repeated tests to cover the event properly. As a result, considerable time may be expended on study of a single problem.

FLEXIBILITY

One of the major features of SE is the fact that the impact event can be viewed directly by the investigator who thereby has complete control of the particular experiment at all times, as may be seen from the typical experimental arrangement in Figure 6. Furthermore, the clarity of the fringes is excellent permitting direct measurement of fringe order at any location at any time. These features permit operation of an impact investigation in much the same manner and employing basically the same techniques as in static photoelasticity.

F/N 0216

P & C Mfg. Code

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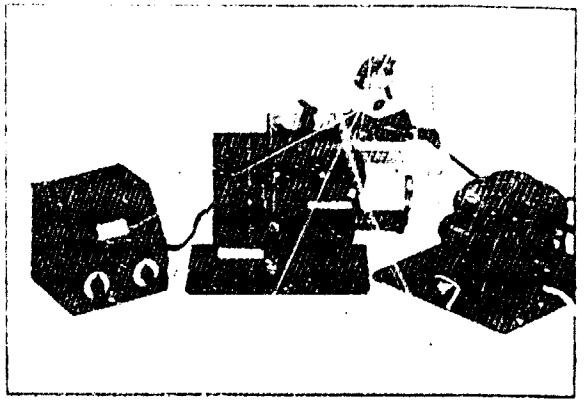

F/N 0217

P/N

07647

APPENDIX 4

Because of these features, photography is unnecessary in contrast to all other methods of studying stress waves. However, photography presents no problem since a still picture may be obtained exactly as in static loading (in which the shutter is permitted to remain open long enou... for a proper exposure) merely by stopping the motion of the event by synchronizing both flash and impact at the desired phase. Figure 7 reveals a one second exposure made at a flash frequency of 60 cps, which consequently involved 60 successive flashes while the shutter was open. The sharpness of the fringes reveals the reliability of this procedure.

Motion picture recording requires a camera with accurate speed control. Otherwise, no photography problem exists in this case either, as may be seen in the sequences of Figures 1 through 5. Figure 1, for example, was obtained with the camera framing rate in synchronization with the strobe at 58 frames per second.

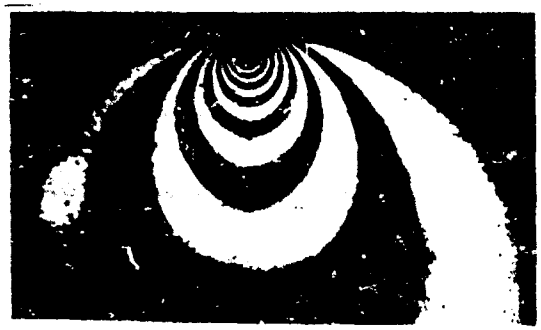

Figure 7 IMPACT STILL PHOTOGRAPH — TAKEN AT 1 SECOND EXPOSURE, 60 CYCLES PER SECOND FLASHING RATE

F/N 0218

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ALLIED RESEARCH ASSOCIATES, INC. — BOSTON 10, MASSACHUSETTS

ATMOSPHERIC PHYSICS, METEOROLOGY AND SATELLITE METEOROLOGY

Under Contract No. AF 19(604)-1509 with the Air Force Research Division, the Corporation has conducted investigations on the simulation of the atmosphere with respect to its radiation transport characteristics. The theoretical relations governing the distribution of radiant intensities in the scattering and absorbing atmosphere with complex boundaries have been related to the measurable optical parameters of available laboratory materials. Besides conventional reflection, transmission and absorption measurements, this program of research required studies on the light scattering properties of colloid systems with respect to the magnitudes and angular directional properties of the scattered light. Studies and analysis of the noise problems associated with quantitative determinations of optical intensities formed a substantial portion of the work. The research culminated in the construction of a practicable prototype analog computer which could determine the intensity patterns of thermal radiation for a variety of atmospheric situations.

• • •

Allied Research engages in the development of atmospheric and meteorological instrumentation. The Company, under a GAR contract with AFRD, is responsible for the design, development and prototype construction of airborne geophysical and atmospheric instrumentation, including the installation of such equipment in balloons, rockets and USAF aircraft. Under this contract, Allied Research has designed and constructed a zenith sky photometer, which is a gimbal-mounted balloon-borne device to measure sky brightness in the upper atmosphere. In addition, Allied Research has designed an airborne device for use in fog dispersal. This task included not only the design of the seeding device itself, but also the installation design for various types of aircraft. Another device designed under this contract was a mechanism for injecting crystalline material into the exhaust of a turbojet for the purpose of suppressing the formation of crystals. This mechanism was designed for installation in the F-84 aircraft and flight tests are currently being performed by the Air Force.

• • •

A recently completed task was the design of modifications to the nose portion of an Aerobee rocket used in high altitude sounding tests for the detection of micrometeorites. In the operation of this sounding device, the nose cone is jettisoned by explosive means after the rocket reaches altitude. Immediately thereafter, a spring-loaded tube used for collecting the micrometeorite dust extends from the rocket. The forward portion of the rocket also contains microphones which record the impingement of the micrometeorite particles.

F/N 0269

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APPENDIX 4

• • •

Allied Research also completed a program for the Air Force Research Division (AF 19(604)-3492 – on cloud and fog modification and dispersal. An airborne dry ice dispersing system was constructed and installed by Allied Research and has been in successful operation for some time. A more advanced operational system, suitable for use by relatively inexperienced personnel, was then designed under this contract. Micrometeorological measurements of fog situations and of the modification of fog by the addition of heat were also made.

Another phase of this contract was carried out in conjunction with the Blue Hills Weather Observatory dealing with research on weather radar. Detailed analyses were made of the meteorological significance of various types of radar return and critical evaluations were performed of advanced radar display techniques. Field studies were also made on radar returns from lightning and "angels" using special display methods evolved for this purpose.

• • •

Under Contract AF 19(604)-3493 to the Air Force Research Division, Allied Research is conducting an evaluation study of ozone sounding instruments. These instruments, intended for use in measuring ozone concentrations in the upper atmosphere, are being calibrated, tested, and evaluated in the Instrumentation Laboratory of Allied Research. Flight tests of these instruments have been completed.

• • •

Under Contract AF 19(604)-3881 with the Air Force Research Division, Allied Research is investigating methods of very short-range forecasting over small areas. A forecasting experiment is being designed to critically evaluate the utility of weather radar in short-range terminal forecasting.

• • •

Under Contract No. AF 19(604)-5581 with the Air Force Research Division, Allied Research has undertaken the design and development of a system to provide for immediate operational use of meteorological observations which will be made from the projected TIROS satellite. The TIROS meteorological satellite will carry television-type cameras through which images of cloud systems in the Earth's atmosphere will be obtained. When properly interpreted, these images will provide information that can be used to increase the meteorological capabilities of the Armed Forces. As with other meteorological data, however, these cloud images are of operational value for only a very few hours after the observations are made. Necessary data storage aboard the satellite will introduce some delay before the images can be made available to the data acquisition stations on the ground. It is imperative, therefore, that this transmitted information be converted to usable form as quickly as possible. The system under development by Allied Research will perform just such a function. Rapid abstraction of pertinent meteorological information from the cloud images will be made possible, thereby permitting

APPENDIX 4

Unclassified

Security Classification

DOCUMENT CONTROL DATA - R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1 ORIGINATING ACTIVITY *(Corporate author)*
AMC QDRI Data Files Program Action Office
Frankford Arsenal
Philadelphia, Pa. 19137

2a REPORT SECURITY CLASSIFICATION
Unclassified

2b GROUP

3 REPORT TITLE
QUALITATIVE DEVELOPMENT REQUIREMENTS INFORMATION (QDRI) DEVELOPMENT OF MICROFILM PROGRAM IN SUPPORT OF AMC QDRI DATA FILES

4 DESCRIPTIVE NOTES *(Type of report and inclusive dates)*
Final Report

5 AUTHOR(S) *(Last name, first name, initial)*
PEIRCE, James G.

6 REPORT DATE	7a TOTAL NO OF PAGES	7b NO OF REFS
March 1967	140	

8a CONTRACT OR GRANT NO.	9a ORIGINATOR'S REPORT NUMBER(S)
AMCMS 5700.00.00201.02 b PROJECT NO. DA Project 1A750203M613 c d	Frankford Arsenal Report R-1838 9b OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)*

10 AVAILABILITY/LIMITATION NOTICES Each transmittal of this document outside the agencies of the U. S. Government must have prior approval of the Commanding Officer, U. S. Army Frankford Arsenal, Philadelphia, Pa. 19137 - Attn: SMUFA-A2100.

11 SUPPLEMENTARY NOTES	12 SPONSORING MILITARY ACTIVITY
	U. S. Army Materiel Command Washington, D. C.

13 ABSTRACT

Microfilming of QDRI records was proposed in order to make total QDRI registration data more accessible to all QDRI offices, create uniform Army-wide QDRI records, reduce volume of QDRI files, limit data requirements on the QDRI data bank (RODATA), and provide faster and more accurate updating of industrial R&D catalog information. The VSMF System of Information Handling Services, Englewood, Colo. was selected as a promising possibility. This report outlines the results obtained from a test using Boston Procurement District files, and contains recommendations for expansion to an Army-wide standard operating system. This activity is considered as a part of the Army's scientific & technical information program.

DD FORM 1473

Unclassified

Security Classification

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Data retrieval						
Information handling						
Microfilming processes						
Qualitative development requirements						
Research and development source lists						
Scientific and technical information						
R&D capability index						

INSTRUCTIONS

1. ORIGINATING ACTIVITY: Enter the name and address of the contractor, subcontractor, grantee, Department of Defense activity or other organization *(corporate author)* issuing the report.

2*a*. REPORT SECURITY CLASSIFICATION: Enter the overall security classification of the report. Indicate whether "Restricted Data" is included. Marking is to be in accordance with appropriate security regulations.

2*b*. GROUP: Automatic downgrading is specified in DoD Directive 5200.10 and Armed Forces Industrial Manual. Enter the group number. Also, when applicable, show that optional markings have been used for Group 3 and Group 4 as authorized.

3. REPORT TITLE: Enter the complete report title in all capital letters. Titles in all cases should be unclassified. If a meaningful title cannot be selected without classification, show title classification in all capitals in parenthesis immediately following the title.

4. DESCRIPTIVE NOTES: If appropriate, enter the type of report, e.g., interim, progress, summary, annual, or final. Give the inclusive dates when a specific reporting period is covered.

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6. REPORT DATE: Enter the date of the report as day, month, year, or month, year. If more than one date appears on the report, use date of publication.

7*a*. TOTAL NUMBER OF PAGES: The total page count should follow normal pagination procedures, i.e., enter the number of pages containing information.

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8*b*, 8*c*, & 8*d*. PROJECT NUMBER: Enter the appropriate military department identification, such as project number, subproject number, system numbers, task number, etc.

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SUPPLEMENTARY

INFORMATION

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DISTRIBUTION AND AVAILABILITY CHANGES

IDENTIFICATION	FORMER STATEMENT	NEW STATEMENT	AUTHORITY
AD-813 977L Frankford Arsenal, Philadelphia, Pa. Final rept. Rept. no. FA-R-1838 Mar 67	USGO: others to Commanding Officer, Frankford Arsenal, Attn: SMUFA-A2100, Philadelphia, Pa.	No limitation	USAFA ltr, 12 Jun 69